



Red Data Book for Guernsey

J. Gilmour and C.T. David

Guernsey Biological Records Centre

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J. Gilmour, BSc and C.T. David, PhD, BSc
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2020

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RED DATA BOOK FOR GUERNSEY

PREFACE

This book was started by the late Dr Charles David and then passed on to me, Jane Gilmour, to continue with once I joined the staff of the Guernsey Biological Records Centre (GBRC) in 2008. I wrote much of it, although it involved many discussions so it is a truly collaborative work. I stopped in 2012, when he suddenly and tragically died and I had to take on the running of the Centre.

The Committee for the Environment and Infrastructure has kindly provided funding towards the completion of this document. For this I am most grateful, as this is a work that both Charles and I felt was dear to our hearts. I have updated as much information as possible to 2020, with help (see below).

ACKNOWLEDGMENTS

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Jane Gilmour

CONTENTS

CONTENTS

PREFACE	II
ACKNOWLEDGMENTS	II
SPECIES DESCRIPTION KEY	XIV
LATIN NAME	XIV
ENGLISH NAME	XIV
SHORE DOCK	XIV
INTRODUCTION	15
WHY IS THIS BOOK NEEDED?	15
RED DATA BOOKS	15
CONCEPT AND BACKGROUND.....	15
THE SIGNIFICANCE OF BIODIVERSITY	16
HABITATS	17
WHAT IS A HABITAT?	17
MICROHABITATS	17
.....	19
SPECIES	20
EXCLUDED SPECIES	21
DATA SOURCES	22
PAST LOSSES AND DECLINES	23
SALT MARSH.....	23
MARSHES	24
WETLAND.....	25
COASTAL	25
SIDE EFFECTS TO END OF GRAZING	27
AGRICULTURAL CHANGE	27
UNIMPROVED DRY GRASSLAND	28
FISHING.....	29
SAND DUNE	29
PLANTING OF NON-NATIVE SPECIES.....	30
CURRENT THREATS	30
GENERAL.....	30
MARINE	31
PERMANENT GRASSLANDS	31
THE FUTURE	31
TABLE 1. AREAS OF VEGETATION TYPES IN GUERNSEY FROM IDC PHASE 1 HABITAT SURVEYS.....	33

CONTENTS

<i>Marine</i>	34
<i>Beaches and cliffs</i>	34
<i>Terrestrial</i>	34
APPENDIX A BIRDS AT RISK	192
HABITAT	36
TYPICAL PLANTS	36
TYPICAL ANIMALS.....	37
MANAGEMENT REQUIREMENTS	38
THREATS TO THIS HABITAT	38
WESTERN GORSE	39
LOUSEWORT	39
ORANGE BIRD’S-FOOT	39
MEADOW PIPET	40
STONECHAT	40
COMMON LINNET	40
HABITAT	41
UNIMPROVED GRASSLANDS	42
TYPICAL PLANTS	42
TYPICAL ANIMALS.....	43
MANAGEMENT REQUIREMENTS	44
THREATS TO THIS HABITAT	44
OPPORTUNITIES AND OBSTACLES	45
STARLING	47
MISTLE THRUSH	47
SONG THRUSH	47
HABITAT	48
TYPICAL PLANTS	48
TYPICAL ANIMALS.....	49
MANAGEMENT REQUIREMENTS	49
THREATS TO THIS HABITAT	49
PERFORATE ST JOHN’S-WORT	50
HEATH-GRASS	50
PIGNUT	50
AUTUMN HAWKBIT	51
HABITAT	52

CONTENTS

TYPICAL PLANTS	52
TYPICAL ANIMALS.....	53
MANAGEMENT REQUIREMENTS.....	53
THREATS TO THIS HABITAT.....	53
ADDER’S-TONGUE.....	54
STRAWBERRY CLOVER	54
SNIPE	54
MOLE CRICKET.....	55
HABITAT.....	56
TYPICAL PLANTS	56
TYPICAL ANIMALS.....	56
CARNATION SEDGE.....	57
MARSH CINQUEFOIL	57
WATER HORSETAIL	57
IVY-LEAVED CROWFOOT	58
JACK SNIPE	58
HABITAT.....	59
TYPICAL PLANTS	59
TYPICAL ANIMALS.....	59
MANAGEMENT REQUIREMENTS.....	60
THREATS TO THIS HABITAT.....	60
REED BUNTING	61
REED WARBLER	61
HABITAT.....	62
TYPICAL PLANTS	62
TYPICAL ANIMALS.....	63
MANAGEMENT REQUIREMENTS.....	63
THREATS TO THIS HABITAT.....	63
EARLY MILLET	64
SAND CATCHFLY	64
BEE ORCHID.....	65
SMALL HARE’S-EAR.....	65
EARLY-PURPLE ORCHID.....	65
GOLD-FRINGED MASON BEE.....	66

CONTENTS

HABITAT	67
TYPICAL PLANTS.....	67
TYPICAL ANIMALS.....	68
MANAGEMENT REQUIREMENTS	68
THREATS TO THIS HABITAT	68
GUERNSEY CENTAURY	68
YELLOW CENTAURY	68
LESSER CENTAURY	69
HABITAT	70
TYPICAL PLANTS.....	70
TYPICAL ANIMALS.....	71
MANAGEMENT REQUIREMENTS	71
THREATS TO THIS HABITAT	71
LAND QUILLWORT	72
GLANVILLE FRITILLARY	73
SKYLARK	74
HABITAT	75
<i>Definition of semi-improved grassland</i>	75
TYPICAL PLANTS.....	76
TYPICAL ANIMALS.....	76
MANAGEMENT REQUIREMENTS	76
THREATS TO THIS HABITAT	76
HABITAT	77
TYPICAL PLANTS.....	77
TYPICAL ANIMALS.....	78
MANAGEMENT REQUIREMENTS	78
THREATS TO THIS HABITAT	78
HAIRY BUTTERCUP	79
TURTLE DOVE	81
HABITAT	82
TYPICAL PLANTS.....	83
IN SPRING, MANY BANKS HAVE TRADITIONALLY BEEN A DELIGHT, WITH MASSES OF PRIMROSES.....	83
▪ BARREN STRAWBERRY.....	83
▪ CAT’S-EAR	83
▪ COMMON SORREL OR SHEEP’S SORREL	83
▪ OX-EYE DAISY	83

CONTENTS

▪ RED CAMPION.....	83
▪ SHEEP'S-BIT	83
THE LAW DEMANDS THAT ALL LANDOWNERS CUT THEIR ROADSIDE BANKS IN THE FIRST TWO WEEKS OF JUNE AND THE LAST TWO WEEKS OF SEPTEMBER, THUS THE MAY FLUSH OF FLOWERS IS CUT EVERY YEAR TO THE CONSTERNATION OF SOME. HOWEVER, THE FLOWERS ARE STARTING TO GO OVER BY MID-JUNE AND HAVE HOPEFULLY SHED SEED. IF THERE IS SUFFICIENT RAIN, THEY MAY GROW UP TO FLOWER AGAIN LATER IN THE YEAR. IF THIS CUT WAS NOT CARRIED OUT, MUCH COARSER GROWTH SUCH AS BRAMBLES, IVY AND SCRUB WOULD INVADE AND THE WILD FLOWERS OF SPRING AND EARLY SUMMER WOULD NOT BE APPARENT. UNFORTUNATELY, THIS IS ALREADY HAPPENING WITH INTERNAL FIELD BANKS AS THE CATTLE NO LONGER GRAZE THEM.....	83
IN A FEW PLACES IN THE SOUTH OF THE ISLAND OUR BANKS SUPPORT VERY RARE FERNS. IT IS THOUGHT THAT THE AMOUNT OF SHADE AND SHELTER GENERATED BY THE DECIDUOUS ELMS ATOP THE BANKS CREATED THE BEST CONDITIONS FOR THESE FERNS TO THRIVE. NUMBERS MAY HAVE DECLINED DUE TO THE LOSS OF THESE ELMS, BUT ALSO THE VICTORIAN CRAZE FOR FERN COLLECTION DID THEM NO GOOD EITHER.....	83
TYPICAL ANIMALS.....	83
MANAGEMENT REQUIREMENTS.....	85
THREATS TO THIS HABITAT.....	85
GUERNSEY FERN	86
GUERNSEY SPLEENWORT	86
UMBELLATE HAWKWEED	86
UPRIGHT HEDGE-PARSLEY.....	87
FIELD SCABIOUS.....	87
HABITAT.....	88
TYPICAL PLANTS	88
TYPICAL ANIMALS.....	89
MANAGEMENT REQUIREMENTS.....	91
THREATS TO THIS HABITAT.....	91
HABITAT.....	92
TYPICAL PLANTS	92
TYPICAL ANIMALS.....	93
THREATS TO THIS HABITAT.....	94
HORNED DUNG BEETLE	95
HORNET ROBBERFLY.....	95
GREATER HORSESHOE BAT	95
HABITAT.....	96
TYPICAL PLANTS	96
TYPICAL ANIMALS.....	96
MANAGEMENT REQUIREMENTS.....	96

CONTENTS

THREATS TO THIS HABITAT	96
HABITAT.....	98
TYPICAL PLANTS.....	98
TYPICAL ANIMALS.....	98
MANAGEMENT REQUIREMENTS	99
THREATS TO THIS HABITAT	99
GOLD-EYE LICHEN OR GOLDEN-EYE	100
DARTFORD WARBLER	100
HABITAT.....	101
TYPICAL PLANTS.....	101
.....	102
TYPICAL ANIMALS.....	104
MANAGEMENT REQUIREMENTS	104
THREATS TO THIS HABITAT:	104
ROYAL FERN	106
BULLFINCH	106
SPOTTED FLYCATCHER	106
WOODCOCK	107
HABITAT.....	108
TYPICAL PLANTS.....	108
TYPICAL ANIMALS.....	108
MANAGEMENT REQUIREMENTS	108
THREATS TO THIS HABITAT	108
HABITAT.....	110
TYPICAL PLANTS.....	110
TYPICAL ANIMALS.....	111
MANAGEMENT REQUIREMENTS	112
THREATS TO THIS HABITAT	112
THREAD-LEAVED WATER-CROWFOOT	113
POND WATER-CROWFOOT.....	113
ALTERNATE WATER-MILFOIL.....	113
BOG PONDWEED	114
BROAD-LEAVED PONDWEED.....	114
BOGBEAN.....	114
TWO-SPINED SEED SHRIMP.....	115

CONTENTS

GREAT SILVER WATER BEETLE	115
WHIRLIGIG BEETLE.....	115
HABITAT.....	116
TYPICAL PLANTS	116
TYPICAL ANIMALS.....	116
MANAGEMENT REQUIREMENTS.....	116
THREATS TO THIS HABITAT.....	117
BRACKISH WATER CROWFOOT	117
HABITAT.....	118
TYPICAL PLANTS	118
TYPICAL ANIMALS.....	118
MANAGEMENT REQUIREMENTS.....	118
THREATS TO THIS HABITAT.....	118
BOG PIMPERNEL.....	120
COMMON YELLOW-SEDGE	120
HABITAT.....	121
TYPICAL PLANTS	122
TYPICAL ANIMALS.....	123
MANAGEMENT REQUIREMENTS.....	123
THREATS TO THIS HABITAT.....	123
BROOKLIME.....	124
MARSH WOUNDWORT	124
MARSH ST. JOHN'S-WORT.....	124
THREE-SPINED STICKLEBACK	125
EUROPEAN EEL	125
GREY WAGTAIL.....	125
HABITAT.....	127
TYPICAL PLANTS	128
TYPICAL ANIMALS.....	129
MANY INVERTEBRATE SPECIES, PARTICULARLY FLIES SUCH AS DOLICHOPODIDS AND EPHYDRIDS; SPECIALISED BUGS; AND CARABID BEETLES.....	129
SALT MARSHES ACT AS HIGH TIDE REFUGES FOR BIRDS FEEDING ON ADJACENT SHORES. THEY ARE OFTEN IMPORTANT FEEDING GROUNDS FOR MIGRATING AND WINTERING BIRDS, WHEN MANY WADERS CAN BE SEEN AT THE VALE POND, PULIAS AND LA ROUSSE MARE. THESE INCLUDE GREY HERON, LITTLE EGRET AND CURLEW. INSECT EATERS INCLUDE MEADOW PIPITS AND YELLOW, WHITE AND PIED WAGTAILS. THE ROUSSE MARE IS THE PRIMARY STAGING POST OF THE LOCAL BREEDING POPULATION OF SHELDUCK.....	129

CONTENTS

MANAGEMENT REQUIREMENTS	130
THREATS TO THIS HABITAT	130
THE MAIN THREATS TO THIS HABITAT ARE:.....	130
▪ DUMPING	130
▪ LOSS OF GRAZING	130
▪ DRAINING AND PREVENTION OF SEA INCURSION	130
▪ POLLUTION OF THE SEA IS ANOTHER THREAT, SHOULD A MAJOR INCIDENT OCCUR OFF THE ISLAND.	130
▪ RECLAMATION.	130
MANY PEOPLE SEE THE SALT MARSH HABITAT AS UNINTERESTING, UNTIDY MARSHLAND AND FEEL IT SHOULD BE TIDIED AND RECLAIMED. THERE ARE ANNUAL CALLS IN THE CORRESPONDENCE COLUMN OF THE GUERNSEY PRESS FOR THE BRACKISH LAGOON AT PULIAS TO BE FILLED IN FOR THESE REASONS, AND THIS HAS VERY RICH PATCH OF SALT MARSH BESIDE IT.	130
GLASSWORTS	131
SEA MILKWORT	131
WILD CELERY	131
GRASS-LEAVED ORACHE	132
SEA CLUB-RUSH	132
SEA ASTER.....	132
HABITAT.....	134
TYPICAL PLANTS.....	135
.....	136
TYPICAL ANIMALS.....	137
MANAGEMENT REQUIREMENTS	138
THREATS TO THIS HABITAT	138
RAY’S KNOTGRASS.....	139
SEA SPURGE	139
SEA STOCK	139
HABITAT.....	140
TYPICAL PLANTS.....	141
TYPICAL ANIMALS.....	142
MANAGEMENT REQUIREMENTS	142
THREATS TO THIS HABITAT	143
SCALY CRICKET	144
YELLOW HORNED-POPPY	144
RINGED PLOVER	144
OYSTERCATCHER	145

CONTENTS

HABITAT	146
TYPICAL PLANTS	146
LICHENS	148
TYPICAL ANIMALS.....	149
MANAGEMENT REQUIREMENTS	149
THREATS TO THIS HABITAT	149
GOLDEN HAIR-LICHEN	150
SHORE DOCK	150
DISTANT SEDGE	150
DOTTED SEDGE	151
LONG-BRACTED SEDGE	151
BLACK BOG-RUSH	151
SHAG	152
COMMON TERN	152
HABITAT	153
TYPICAL PLANTS	153
TYPICAL ANIMALS.....	153
MANAGEMENT REQUIREMENTS	154
THREATS TO THIS HABITAT	154
SAND MARTIN	155
HABITAT	156
TYPICAL PLANTS	156
THIS IS A DIFFICULT HABITAT FOR PLANTS DUE TO ITS INHOSPITABLE SHIFTING NATURE. HOWEVER, EELGRASS IS EXPOSED BY THE BIGGEST SPRING TIDES.	156
TYPICAL ANIMALS.....	156
MANAGEMENT REQUIREMENTS	159
THREATS TO THIS HABITAT	159
DUNLIN	160
CURLEW	160
BRENT GOOSE	160
HABITAT	161
MICROHABITATS	161
TYPICAL PLANTS	163
TYPICAL ANIMALS.....	164
MANAGEMENT REQUIREMENTS	167

CONTENTS

THREATS TO THIS HABITAT	167
GREEN ORMER	168
TURNSTONE	168
HABITAT.....	169
TYPICAL PLANTS.....	169
TYPICAL ANIMALS.....	169
MANAGEMENT REQUIREMENTS	170
THREATS TO THIS HABITAT	170
HABITAT.....	171
TYPICAL PLANTS.....	171
TYPICAL ANIMALS.....	172
MANAGEMENT REQUIREMENTS	172
THREATS TO THIS HABITAT	172
DATA REQUIREMENTS	173
HABITAT.....	174
TYPICAL PLANTS.....	174
TYPICAL ANIMALS.....	174
MANAGEMENT REQUIREMENTS	175
THREATS TO THIS HABITAT	175
LEGISLATION REQUIREMENTS.....	175
DATA REQUIREMENTS	175
HABITAT.....	176
TYPICAL PLANTS.....	176
TYPICAL ANIMALS.....	177
MANAGEMENT REQUIREMENTS	177
THREATS TO THIS HABITAT	177
LEGISLATION REQUIREMENTS.....	177
DATA REQUIREMENTS	177
HABITAT.....	179
TYPICAL ANIMALS.....	179
MANAGEMENT REQUIREMENTS	180
THREATS TO THESE HABITATS	180
LEGISLATION REQUIREMENTS.....	180
DATA REQUIREMENTS	180

CONTENTS

EUROPEAN SPINY LOBSTER	182
PINK SEA FAN	182
BASKING SHARK	182
PORBEAGLE SHARK.....	183
NURSEHOUND.....	183
BLONDE RAY.....	183
THORNBACK RAY	184
UNDULATE RAY	184
SMALL EYED RAY	184
COMMON PORPOISE	185
COMMON DOLPHIN.....	185
HABITAT.....	186
MANAGEMENT REQUIREMENTS.....	187
THREATS TO THIS HABITAT.....	187
LEGISLATION REQUIREMENTS	187
DATA REQUIREMENTS	187
SWIFT.....	188
SWALLOW	188
HOUSE MARTIN.....	188
HOUSE SPARROW	189
GREY LONG EARED BAT.....	189
BIBLIOGRAPHY	190

SPECIES DESCRIPTIONS


SPECIES DESCRIPTION KEY

After each habitat section we focus on representative rare, threatened and locally significant species that typify that habitat. These species are at risk of vanishing if that habitat is damaged or lost. Each species is described and the format is detailed below:

Latin name

ENGLISH NAME

Family



Status in Guernsey

Status in Jersey

Status in France. Livre Rouge, red data book for the whole of France; Protégée B, Protected in Brittany; Protégée B-N, Protected in Basse-Normandie; Pn Protection nationale.

Status in the UK.


Rumex rupestris


SHORE DOCK

Habitat – Where fresh-water runs onto a beach.

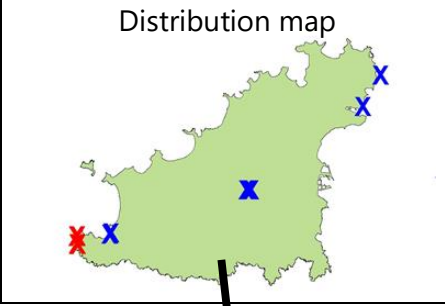
Comments – The rarest dock in Europe, with a distribution range from Wales to Spain. In Guernsey plants are known from three sites at the bottom of the cliffs at Pleinmont and number about 20 plants.

Threats – They are probably safe from most threats except heavy oil pollution or sea-level rise. However, the two plants in Herm have disappeared in the last 10 years.





Distribution map



Distribution maps

Maps for birds or bats are not included as reported sightings are not necessarily representative of their population numbers or habitat needs due to the small size of the island, the fact they are highly mobile and that Guernsey is on a migration route for some species.

Record key

Blue: pre 1980 records

Cyan: 1980 – 1989 records

Magenta: 1990 – 1999 records

Green: 2000 – 2009 records

Red: 2010 – 2017 records

INTRODUCTION

INTRODUCTION

Why is this book needed?

With public awareness at an all-time high for the threats our natural world is facing, policy makers are unable to create robust management and protection measures where there is no data available to form the basis of these plans.

Providing this data is the key aim of a Red Data Book. The International Union for Conservation of Nature (IUCN) maintains the Global Red Data Book. IUCN is the world's most detailed inventory centre of the global conservation status of biological species. A Red Data Book for Guernsey is important as it can provide information on our local rare, endangered and unique species. To see how our island is changing, we need a baseline for information, which is why the decision to publish this book, even incomplete with data gaps, has been made. It will be a living document that we, as a community, update and improve on, because if we wait for perfect, we may lose all our species first.

RED DATA BOOKS

Concept and background

It has been said that some natural processes, often called *ecosystem services*, may be infinite in value. Thus, we need to save the habitats upon which not only our wildlife, but we also depend, even though we are often blissfully unaware of this.

Why do habitats have such a key role? Not only for their vital services, such as temperature control, flood control and defence, provision of sights of wonder and delight, places to relax and unwind, to exercise and revitalise, but also because most plants are associated with habitats and most animals require one or more in order to survive.

Red Data Books, in their pure form, are lists of species whose continued existence is threatened and which are classified into different categories of perceived risk. As habitats have such a critical role to play, we have included a description of the range to be found locally, highlighting

management requirements and threats, as many need protection or intervention in order to survive.

We hope that the book will act not only as a Red Data Book, but also as a reference manual for Guernsey's habitats and the species that depend on them for continued survival. This first edition is a foundation or baseline to build on.

SPECIES THAT WILL NEED HELP

The Glanville fritillary butterfly and stonechat are examples of animal species that will need help if they, along with with associated habitats are to survive in the future.



Glanville Fritillary is Guernsey's only resident Fritillary butterfly.



Stonechat

INTRODUCTION

The significance of biodiversity

Biodiversity is the whole range of animals and plants found in a given area. This ecological diversity includes not only a high number of plant and animal species, but also genetic diversity i.e. a high number of genotypes. High biodiversity is important as it enables environments to be more robust and flexible in the face of adversity, such as physical disturbance, extreme weather events, and invasion by non-native species. Healthy, diverse habitats include good soil 'health' (a good range of micro-organisms, fungi, trace elements and balance of nutrients and so forth). With global climate change, such qualities will be vital to ensure that we do not see large numbers of extinctions and environmental failures. Among the most vulnerable wildlife are slow growing, long-lived species, which will have difficulty in responding to rapid changes in weather patterns and climatic shifts, but which will have a better chance of survival if their habitat is in good condition. Island and locally-fragmented populations are vulnerable because they may have nowhere to retreat to and return from where fluctuations in the environment occur.

Habitats have always been significant and societies that have ignored good environmental management have ultimately failed. Notable examples include Easter Island, the Mayan, and the Mesopotamian civilisations.

The remaining areas of high biodiversity in the Islands are mostly found in the local nature reserves, Ramsar sites, Sites of Special Significance (SSSs) and Areas of Biodiversity Importance (ABIs). These latter two are designated under planning law and include most of the Sites of Nature Conservation Interest (SNICs) that existed under the previous planning law.

These areas provide a valuable support for the mental, physical and emotional health of society. On land, flowers provide colourful highlights, whilst leaves form the backdrop in subtle variety of greens and browns. This creates a calming effect, whilst the sounds and movement of birds and insects give a sense of life. This enables

BIODIVERSITY EXAMPLES

Examples of terrestrial biodiversity, Marshy Grassland (top) and Dune Grassland.



Biodiversity variation in rocky substrate intertidal habitats:



Relatively open conditions where plants dominate



By contrast in the dark conditions of a cave animals take centre stage

INTRODUCTION

people to reconnect with nature as well as allowing time to relax, contemplate and reflect.

On the sea-shore, the physical environment takes centre stage and people may be unaware of the birds that feed on the range of creatures living between the tides. However, generations of children have marvelled at the variety of animals they find in rock pools and shallow water. It can be a source of hours of pleasure and exploration. Many adults too enjoy searching for ormers, perhaps in part because they gain from the peacefulness of being away from the pressures of modern life.

It is notable that local nature reserves and areas of semi-natural and natural landscape, such as the cliffs, commons, and beaches, attract thousands of people each year.

Last, but not least, the natural environment also provides services such as the production of oxygen as a by-product of photosynthesis and the sequestration of carbon (the 'capture' of carbon dioxide) by trees, bogs and the sea.

HABITATS

What is a habitat?

The word habitat means a place where an animal or plant species lives as well as a community or assemblage of many species together. It is also used to mean both the physical and environmental conditions that support a particular community, together with the community itself.

The habitats we recognise here are based on the Island Development Committee (IDC) Phase 1 Habitat survey of the Island carried out in 1999 and repeated in 2010 by Environment Guernsey for the Environment Department, but also using our knowledge of specific variations on the habitat types included in the survey.

Many of our most diverse habitats are at risk of extinction, along with their dependent flora and fauna. Rarer habitats are more vulnerable as they cover small areas and are often fragmented. Size really does matter as many animals and plants cannot maintain successful populations if their habitat is too small and disjointed. Problems of inbreeding can occur or the species may face

extinction because the population is too small to withstand losses associated with normal weather variations. If these habitats can be maintained, linked together and areas retrieved from recent degradation, then a wide range of plants and animals will have a chance of surviving in the Islands for the foreseeable future.

The most critically endangered habitats on the Islands are dune slacks, unimproved dry grasslands, coastal heaths, mobile dunes, and salt marshes. Less highly threatened, but still vulnerable are shingle banks, soft cliffs, marshy grasslands, ponds, brackish lagoons, coastal grasslands, sand-dune grasslands and species-rich arable lands. Semi-natural deciduous woodland, reed beds and scrub are not threatened at present, as they have spread during the 20th century, but they are still important in the range of habitats as they have particular species associated with them. The Islands have rich marine and intertidal habitats, and whilst these are not under the same pressures and remain reasonably abundant, they are nevertheless vulnerable and need vigilance to ensure that their associated plant and animal communities continue to thrive.

Animals often require more than one habitat to survive so any loss will affect not only those animals exclusively associated with that habitat.

The distribution maps for the habitats in the book come from the habitat survey, but these do not include microhabitats. However, we have included some in this book, as these are valuable in their own right.

MICROHABITATS

A microhabitat is a small scale, localised habitat within a larger ecosystem that supports a distinct

INTRODUCTION

TERRESTRIAL MICROHABITATS

Microhabitats are often created by small changes within a larger habitat. Clumps of grass and other herbaceous plants are valuable for animals. Invertebrates can over-winter safe from the weather and predators, bumble bees may use them as nesting places and they provide a refuge for small mammals such as voles.



Bare ground allowing a slow worm to sunbathe



Small change: Tussock sedge and lady fern tussocks provide a refuge for a variety of insects and small mammals



Woodland Edge: English oak, *Quercus robor*

flora and fauna, such as a fallen and decomposing log in a forest supporting a specialised range of plants and animals. It also describes the conditions and organisms in the

A microhabitat is a small area which differs somehow from the surrounding habitat. Its unique conditions may be home to unique species that may not be found in the larger region.

<https://www.nationalgeographic.org/topics/resource-library-habitats-and-microhabitats/>

immediate vicinity of a plant or animal.

As microhabitats can be so small and specialised, they are both numerous and vary enormously. Some common types locally include:

Flushes are miniature wetlands, providing a vital source of moisture to small animals as well as a niche for wetland plants in an otherwise dry area.

Bare ground is important for grasshoppers, bush-crickets, bees, wasps and a variety of other invertebrates as well as cold-blooded vertebrates such as slow worms.

Cracks in rocks and overhangs can provide important sites for animals to shelter from the drying effects of the sun when the tide is out.

Microhabitats can be formed by changes in nutrients. Thus, different lichens are found on trees and shrubs that birds use as roosting sites; the yellow *Xanthoria* species are more common in these nitrogen-enriched places. This is also the case on roofs and rocks where birds commonly roost so houses with dove roosts have yellower roofs than normal.

Dung is often overlooked as a microhabitat is often overlooked (see the separate section on dung [page XXX](#)).

In sand dunes where the turf is short due to heavy grazing by rabbits, or heavy trampling, shallow hollows enable small plants, especially annuals, to flower, and provide extra warmth, which will benefit insects.

Boundaries between different habitats are also important. The zone between rocks and sand

INTRODUCTION

MARINE MICROHABITATS

Boundaries between different habitats are also important. The zone between rocks and sand where seaweed and stones are present is an important feeding site for birds.



Cracks: A blenny tucked into a crack between rocks on the shore



Boundary: The stones that have collected between a stretch of sand and the rocks provide a turnstone with a valuable place to search for food



Marine Woodland Edge: Rainbow wrack, *Cystoseira tamariscifolia*

where seaweed and stones are present is an important feeding site for birds.

Woodland edges are often rich in plants and good for insects.

Trunks of trees are a habitat for many invertebrates and individual species of plant can support large numbers of other species, notably the native English oak on land and the brown seaweed rainbow wrack in rock pools.

INTRODUCTION

SPECIES

The plants and animals that are listed have been placed in the following categories:

1. Extinct
2. Critically endangered
3. Endangered
4. Vulnerable

As the Channel Islands fall within one biogeographical zone that includes north-west France, we have included the status of these species in Jersey where known, using local naturalists' knowledge) and the closest regions of France. We have used information on Basse-Normandie and Brittany from the 'Livre Rouge' for this. For completeness, the French and UK statuses are included (see references), but the latter need to be treated with caution as, given the Channel Islands' position in the local biogeographical zone, these islands are on the northern edge of many species' ranges.

Over 13,000 species of plants and animals are recorded in the Channel Islands. As the list of known threatened species is too extensive to cover in detail, it is only possible to write about a small percentage of them; those species not included in the text have been listed in the appendix.

While not currently considered threatened, ormers are of cultural importance to the Islands and so are included.

RARE SPECIES

Some rare species in the Channel Islands are at or near the northernmost end of their range.



Blue-winged grasshopper, *Oedipoda caerulescens*



Sea stock, *Matthiola sinuata*



Green ormer, *Haliotis tuberculata*

INTRODUCTION

RARE SPECIES

Just some of the species that are now rare and could benefit from conservation measures



Lousewort, *Pedicularis sylvatica*



Linnets



The nest of the bee, *Osmia aurulenta*, in a snail shell on a sand-dune at Port Soif

Excluded species

Species that are data deficient have been excluded by definition in this first addition. We have not included some species that are rare, either because their needs are not met fully by any local habitat or because the species appears to be esoteric in its requirements.

Sadly, the range of species contained in the book cannot represent more than a small proportion of threatened species to be found in Guernsey and Herm. Many species are missing: we have too little knowledge of the abundance of many marine species, most insects and other terrestrial invertebrates. Some can only be identified by dissection and others do not have accessible keys to determine the species with any comfort. Marine species may only be accessible at certain tides or to divers and so are less well studied, as are many microscopic species. Given the problems with identification and accessibility, many invertebrate groups have few or no records, recent or otherwise.

DIFFICULT TO IDENTIFY

This Ichneumonid wasp is one of many species that cannot be easily identified with certainty so its status cannot be determined



INTRODUCTION

DATA SOURCES

The species data in this book is compiled from both historical and current records. There are many historical records, so that it is possible to see how species distribution and abundance have varied over time and, using the data for typical species, how habitats have changed. Sources of data on plants include: Gosselin's Herbarium and notebooks from about 1790, Babington's 1839, Marquand's 1901 and McClintock's 1975 books on plants, the

Transactions of La Société Guernesiaise, and the information database maintained by The Guernsey Biological Records Centre. For birds, Smith's 1879 book gives an invaluable insight into their status in the 19th century and Dobson's 1952 book for the middle of the 20th century. For other animals, the main records are from the Transactions of La Société Guernesiaise. The Guernsey Biological Records Centre maintains a database of all species recorded from the Channel Islands and archive of nearly 3,000 papers and books referring to them.

Species distribution maps can be extracted from the database and in this book are colour-coded by historical periods, see page xiv for key to distribution maps for each important species. These indicator species are described at the end of each habitat section.

INTRODUCTION

PAST LOSSES AND DECLINES

Losses have occurred throughout recent history. Both plants and animals can suffer losses for a long time before they reach a *tipping point*. After this several factors can be problematic. The habitats may be too sparsely distributed or too small to provide for successful survival– the home ranges too small to provide food or the individuals too far apart to find mates or for pollen to be carried to another flower by bees. An individual species' gene pool can also shrink to such an extent that inbreeding leaves it vulnerable as it may no longer be robust enough in the face of any adversity, such as disease or adverse weather conditions. A species may take some years to become extinct after reaching this point so that the cause is more difficult to pinpoint, especially if it is mobile; but ultimately habitat loss will have triggered the decline in the vast majority of cases.

Although we have highlighted plants, the loss of plant communities in various habitats has inevitably led to losses in a range of animal species, immediately affecting any species closely associated with particular plants, but ultimately also animals further up the food chains and those who use a range of habitats.

Salt marsh

The draining of the Braye du Valle in 1806 by the British Government (as a defence measure) removed the greater part of local salt marshes, leading to the extinction of common sea-lavender, sea heath and marsh mallow. The last has recently been seen, albeit as single plants, in brackish conditions behind west coast beaches. As it is occasionally grown in gardens this may be the source of the seed, but it is unlikely that either of these was planted. Salt marsh plants that are now extremely scarce include:

- annual sea-blite
- beaked tasselweed - possibly extinct
- common arrowgrass
- sea arrowgrass - possibly extinct
- common glasswort
- purple glasswort
- common saltmarsh-grass

- reflexed saltmarsh-grass - if not extinct
- grey and sea clubrush
- lesser sea-spurrey
- sea aster
- sea milkwort
- wild celery

Marquand records wild celery as "*rather common in marshy places in the low districts, especially those within the influence of the sea...*", whilst sea milkwort was "*common in brackish marshes on the north and north-west coast from Rocquaine to the Vale, and at Lihou Island...*"

SALT MARSH DECLINES



Marsh mallow, *Althaea officinalis*. Only one or two plants currently known



Wild celery, *Apium graveolens*. Now restricted to three sites.

INTRODUCTION

Marshes

La Grande Mare, La Mare de Carteret, La Claire Mare and other marshes were once much wetter. In draining these areas, many plants were lost, particularly in La Grande Mare. These areas have probably been drained in a number of stages, having been lakes several hundred years ago, then wetlands and now dry in places (such as La Mare de Carteret playing fields). Losses include much of the population of:

- common cotton grass*
- common twayblade*
- creeping willow*
- few-flowered spike-rush
- flat sedge
- flea sedge*
- lesser water-plantain*
- mare's tail
- marsh cinquefoil*
- marsh helleborine*
- marsh St John's wort - see below
- marsh ragwort
- marsh willowherb*
- moonwort
- parsley water-dropwort
- round-leaved sundew*
- round-leaved wintergreen*
- summer ladies' tresses*
- trifold bur marigold
- water germander
- water purslane

Plants now very scarce include:

- bog pimpernel
- carnation sedge
- common sedges
- common water-plantain
- compact rush
- marsh bedstraw
- slender marsh-bedstraw
- skullcap
- tufted forget-me-not

MARSH SPECIES DECLINES



Extinct: Lesser water-plantain, *Baldellia ranunculoides*.
The leaves are marsh pennywort.



Extinct: Bogbean, *Menyanthes trifoliata*.



Common water-plantain, *Alisma plantago-aquatica*, in a swamp.



Bog pimpernel, *Anagallis tenella*, in typical, but now rare, damp grazed site.

INTRODUCTION

- water horsetail

Losses of water plants include:

- bogbean*
- bog pondweed*
- fen pondweed,*
- fat duckweed
- some stoneworts* - *Chara* and *Nitella* species

Water plants that are now scarce include:

- Thread-leaved water-crowfoot

Plants with stars (*) were typically, but not always exclusively, known from La Grande Mare. Its draining and subsequent transformation into an amenity area, has been a huge loss to Guernsey's biodiversity.

The Victorian craze for plants as specimens for collections and for gardens did not help and almost certainly helped to wipe out summer ladies' tresses and bogbean. Ferns such as royal fern were reduced to relict populations of perhaps a few individuals by the end of the 19th century and at present it is not known whether this exists in Guernsey other than as planted specimens. One tiny plant found in 2011 has vanished! The locality on a cliff and its size gives us hope that there may be more hidden in the undergrowth.

Culverting of streams in inland valleys in the 19th century almost certainly led to a loss of streamside habitats with losses probably including brooklime inland. Since the stream in the Silbe Nature Reserve has been uncovered and this plant reintroduced, it has been doing well there by the stream where not shaded and in the sunny boggy shallows of the mill pond. Other plants have similarly reappeared in the Silbe when the light conditions are good, such as water-pepper and water-plantain.

In the 19th century, there was a great expansion of glasshouses at the expense of orchards and gardens (Smith, 1879). The quarry industry brought in a significant work-force, many of whom carried guns (Smith, 1879). These changes no doubt had an impact on the bird population of Guernsey.

Wetland

The loss of wetland was countered to some extent, by the decline in the quarrying industry during the 20th century. This left over 300 quarries, mostly in the north of the Island, to fill with water. Shallow quarries were colonised by a great variety of life, but many of these have subsequently been filled with rubbish.

Coastal

Much coastal land was dumped on, often on the headlands, when the quarrying industry was at its height. Sea walls were built around the bays – mostly in the 19th century, but around L'Ancrese Bay in the 1940s as an anti-tank defence. Thus, during the period from 1800 to the 1940s much of the natural coastline was lost along the low coasts: the mobile dunes and shingle banks being the most affected, although some low soft cliffs were lost too. Further rock waste was dumped next to fortifications built during the Occupation. The main losses were in open habitats associated with the tops of beaches.

Losses include:

- purple spurge, last recorded in Guernsey in 1931
- sea spurge, which hung on in the L'Ancrese area until the 1970s

Other plants are now very scarce, notably:

- distant sedge
- grass-leaved orache
- Ray's knotgrass
- sea bindweed
- sea holly
- sea stock

INTRODUCTION

COASTAL PLANT DECLINES

Coastal habitat loss due to changes in use, specifically the large scale reduction in grazing has led to scrub and woodland expansion. Many plant and animal species have been adversely affected. Some characteristic species are highlighted below:



Sea bindweed, *Calystegia soldanella*, on a mobile dune.



Wild thyme, *Thymus polytrichus*, growing in one of the few areas of L'Ancrese still grazed.



Common centaury, *Centaurium erythraea*, with pink flowers growing in rabbit-grazed turf at Bec du Nez.

Marquand comments that sea bindweed was "common all over the sandy shores of the north and north-west". Grass-leaved orache was "frequent in the neighbourhood of L'Erée and Rocquaine...", sea holly was "common on the sandy shores of the lowlands all round the north and north-west".

Abandonment of grazing on the cliffs and coastal commons, mostly since the First World War, has led to a dramatic decline in unimproved coastal and sand dune grasslands and heathland, along with sunny streams, flushes and marshy cliff valley habitats. The cliffs have mostly become scrub or woodland. The coastal commons have largely become either rank grassland where grazing has recently ceased or is infrequent or they are cut infrequently and the cuttings are left, or scrub, where no management is carried out, or they are mown as amenity grassland.

The cliff streams and marshy areas have become shaded so that plants such as lesser skullcap, brooklime, brookweed, creeping forget-me-not, *Myosotis secunda*, bog pimpernel and marsh St John's wort lost a major part of their remaining habitat. Marquand records brookweed as "frequent in wet places in all districts, in the interior as well as on the coast: occurs in all the cliff valleys", but now it is scarce, most notably occurring near the waterfalls where cliff streams come down to the shore and in flushes at the bottom of the cliffs.

One of the notable losses is the skylark, which hung on as a breeding species till 2007, but may have disappeared without anybody being aware that it had gone.

The areas of really high-quality dry grassland are now few and far between on our coasts. Plants with critically low populations include sand catchfly, dwarf millet, blue fleabane, and dwarf adder's-tongue. Marquand noted that sand catchfly was "locally common on the sandhills and sandy turf about Vazon Bay, Cobo, Grandes Rocques, and the Vale coast; also on many parts of L'Ancrese Common" – what a change!

Even plants that are faring better show the marked effects of such changes. Shaggy mouse-ear hawkweed, now found only here and there,

INTRODUCTION

occurred "*abundantly on the cliffs*" in Marquand's time. Wild clay was "*frequent in the low sandy districts of the north and north-west*". Red bartsia was "*rather common throughout the Island*" and thrift was "*very common all round the coast*", but now both are intermittent in their distribution. Wild thyme was "*very common all round the coast*", but is now scarce on the cliffs and only common in the best sand dune grassland areas. Portland spurge was "*very common on the cliffs*". Common centaury, now occasional in coastal grassland was "*common in all parts of the Island in suitable places*".

Side effects to end of grazing

Another side effect of the cessation of grazing in many parts of the Island has been the loss of bare ground and reduction in dung. Animals open up the sward in grasslands by poaching, cutting the turf and heavy grazing in places, thus providing nest sites for insects, dust bath areas for birds, nest building material for both insects, like *Osmia* bees and birds such as barn swallows and house martins, and important warming up sites for insects and reptiles.

Bare patches also provide important places for plants to seed into, whilst trampling may help to firm in/ bury the seeds. Dung has a whole range of dependent insects. These two microhabitats are so important that they each have a section devoted to them (page xxx).

As a consequence, the huge decline in grazing has contributed to the local decline of both the greater horseshoe bat, as one of its preferred foods is dung beetles; and the starling, as insect larvae in dung are a valued source of food.

Agricultural change

Intensive agriculture developed as a significant form of land management after the Second World War. Here the damage has been notably through repeated ploughing and re-seeding of grasslands, drainage, and applications of artificial fertilisers, mainly nitrates and phosphates and herbicides. Ploughing kills animals that spend time below the ground, such as slow worms, Guernsey voles, long-tailed field mice, and white-toothed shrews, along with

much of the soil fauna, including earthworms and many insect larvae, pupae and eggs. It destroys fungi by cutting the mycelial networks, from which slow-growing fungi, like waxcaps, can take decades to recover (Griffith, Bratton & Easton, 2004).

Artificial fertilisers have increased the growth of grasses and certain vigorous plants like stinging nettles, hogweed and docks at the expense of many smaller plants. Some recent surveys have shown that artificial nitrates have a negative

BARE GROUND



Green lizards are found around Fort George. They need bare ground, walls or short turf in order to warm up in the mornings.

effect on the abundance and diversity of macrofungi, most notably waxcaps, fairy clubs, pink gills and earth tongues (Griffith, Bratton & Easton, 2004) Could it be that they also damage the soil mycorrhiza? Artificial fertilizers also leach into streams and the sea, leading to over-fertilisation and ultimately plankton blooms in the marine environment

Floral extinctions due to agricultural improvements include green-winged orchid and yellow rattle. The former is reputedly particularly sensitive to applications of phosphates.

The change from hay-making to silage cutting in the last 30 years or so has been a problem for insects, as various butterflies, crickets and grasshoppers cannot complete their life-cycles. Cutting for silage several times a year increases the damage as both food and cover are repeatedly removed, leading additionally, to a decline in the numbers of small mammals, such as voles; with a knock-on effect on predators that are dependent on such prey.

INTRODUCTION

The effects of habitat loss on marshy grassland plants are such that to read Marquand's descriptions can be distressing! Loose-flowered orchids were "*frequent in moist meadows in all parts of the Island, but especially about Grande Mare and Vazon, where at the beginning of June the fields are quite purple with these beautiful flowers*". Spotted orchids were "*common in all districts*", and common adder's tongue, which is now thoroughly rare, occurred "*plentifully here and there in moist meadows...*". Marsh pennywort was "*common in marshes, wet places and damp meadows in all parts of the Island*", common fleabane "*common all over the Island in wet places and moist meadows*", ragged robin was "*common in marshes and wet meadows in all parts*", square-stemmed St John's wort was "*common on stream-sides and in wet marshy places throughout the Island*", and bog stitchwort was "*common in wet meadows and by springs and streamsides in all parts of the Island*". Marsh woundwort was "*frequent throughout the Island generally...*". None of these is other than occasional.

Further examples include bugle, which was "*frequent in damp pastures and moist places by roadsides....abundant on some parts of the cliffs*" and is now rare and at risk of extinction. Tufted vetch, a plant less restricted to damp places, but still now relatively scarce, was "*frequent in the low districts, both near the coast and inland*".

Other unwelcome aspects of modern agriculture have been the use of the drug Ivermectin to worm cows and an increase in keeping cows indoors other than in winter. The first kills many of the insects that breed in dung and the second will reduce the availability of dung for these insects, potentially at crucial times for their life cycles.

Unimproved dry grassland

Unimproved dry grassland has especially suffered from a mixture of loss of grazing and improvement. Perforate St John's wort was "*rather common in all parts, especially so in the interior, where it is plentiful in the hedges*" – now there may be less than 20 plants outside gardens. Ox-eye daisy was "*common throughout*

AGRICULTURAL CHANGE



Extinct: Yellow-rattle, *Rhinanthus minor*, growing in damp grassland in coastal Normandy.



Occasional: Common fleabane.



Occasional: Square-stemmed St John's wort



Occasional: Bugle (above). Tufted vetch (below)



INTRODUCTION

the Island, particularly plentiful on the southern cliffs" – it is all along the cliffs in the pockets of grassland still surviving and at the edges of paths, but is certainly not common elsewhere.

The same story applies to common knapweed, which was "*common throughout the Island*". Common mallow was "*common throughout the Island*" whilst pale flax was "*frequent throughout the Island*". These are now found largely by the coast. Selfheal was "*generally distributed and rather common in pastures, commons and waste places*" and autumn hawkbit was "*generally distributed and rather common in pastures, and on commons and waste ground*". Whilst selfheal is still found here and there, partly because it grows in some wetter places, autumn hawkbit is now thoroughly rare. Chamomile, which grows in both dry and damp places, was "*rather common in all parts of the Island, especially near the sea*", but is now again here and there, mostly near the coast.

Arable fields have seen declines of a variety of arable weeds due to increased use of herbicides and artificial fertilisers. Arable crop growing has declined over the last couple of hundred years and this has also had an impact. Marquand recorded scented mayweed as "*rather common in cultivated and waste ground*", scentless mayweed as "*generally distributed and rather common on waysides, borders of fields and waste spots*", stinking mayweed was "*rather common in*

cornfields and other cultivated ground in the south and west...", field woundwort was "*common in all districts*", and weasel's-snout or lesser snapdragon was "*frequent in cultivated fields and gardens in all parts of the Island*".

Fishing

Industrialisation of fishing, including pair-trawling, dredging and overexploitation by fishing fleets is a serious threat to fish and to other marine life. A study published in 2010 indicated that there has been a decline of 94% in fish stocks since 1889 in the United Kingdom

"It is clear that seabed ecosystems have undergone a profound reorganization since the industrialization of fishing and that commercial stocks of most bottom-living species, which once comprised an important component of marine ecosystems, collapsed long ago."

- Thurstan, Brockington & Roberts

(UK).

The seas around the Channel Islands have not escaped the effects. UK scallop dredgers have been reported to be damaging the sea bed and leaving it looking sterile (report in the Guernsey Press on 7th June 2010).

Sand Dune

Much sand dune habitat was dug up for use in building in the 1960s. The loss of grassland was mitigated by an increase in slacks, many of which had ponds, especially in winter. These were rich in plant species and water beetles, but most slacks have since been in-filled or flattened and built on or turned into amenity grassland. Losses from the disappearance of so many slacks include small fleabane; Guernsey, lesser and yellow centauries are all now severely threatened. The latter was, according to Marquand, "*abundant all over Fort Doyle headland and on several parts of L'Ancrese Common*".

The dumping on and in-filling of marshes, slacks and shallow water-filled quarries around the Island has continued over time, leading to the loss of the final known population of marsh St John's wort in the 1990s.

UNIMPROVED DRY GRASSLAND

Ox-eye daisy was once common throughout Guernsey, but is now hanging on at path edges and in pockets of grassland.



INTRODUCTION

Planting of non-native species

The planting of non-native woodland has taken place at various times during the last century or so. Examples include the mainly Monterey pine plantation at Le Guet, and round parts of the Reservoir. This tree supports few other species and virtually nothing can grow underneath. Fortunately, it is now being replaced at the Reservoir with other species of pine and deciduous trees.

Marquand's words seem almost unbelievable at times, but they bring into sharp focus the vast changes that have taken place in the last hundred years or so. The declines in insects will have been as dramatic, but there are fewer records to enable us to compare. One of the problems is that when wildlife is common no one tends to record such information – rare species get much more attention.

Likewise, reading of past birds in Smith's book is like reading of a foreign place: the stonechat was "*a numerous and regular summer visitant, breeding in all the Islands*"; the skylark was "*a common and well-known bird, and resident in all the Islands*"; the yellow hammer was "*resident and breeding in all the Islands*"; the willow warbler (then called the 'willow wren') was "*a tolerably numerous summer visitant...it remains all summer and breeds*"; the linnet was "*resident and the most numerous birds in the Islands by far, outnumbering even the house sparrow...*"; the chough was "*a common resident in Guernsey*"; the wryneck was "*generally a numerous summer visitant to the Islands*"; the cuckoo was "*one of the commonest and most numerous summer visitants to the Islands*"; the swift was a "*tolerably numerous summer visitant to all the Islands*"; the corncrake (or 'land rail') was "*a common summer resident, breeding certainly in Guernsey*"; the kittiwake was "*a regular and numerous autumn and winter visitor*" and the common gull was "*by no means uncommon in the Channels Island during the winter*".

The declines in the numbers of a range of bird species have taken places at various times over the last hundred years or so. Farming changes and loss of traditionally-managed farmland in the Island will account for the decline in some of

these, such as the skylark, and linnet. A change from extensive wheat-growing during the 19th century will no doubt have affected the likes of yellow hammers and corn crakes. However, migrants, by the nature of their life-style will, in some cases, have been seriously affected by changes here and, in others, by the changes in their other residences so the picture is not as clear cut as it is with resident birds. Also, birds often need a variety of habitats for nesting, roosting and feeding so making it more difficult to be precise as to which loss has been crucial.

The past declines in a whole range of other animals are hard to document, except by the use of circumstantial evidence. The stoat was here, but is now, as far as the lack of recent records show, gone. Resident bats, slow worms and others must have been severely affected by the loss of farmland. Older people often state that bats were common '*when they were young*' i.e. around the middle of the 20th Century. Insects that are dependent on unimproved grassland, heaths, marshes and farmland, such as many bee species, must have experienced a massive decline in abundance, although we do not have any quantitative data to demonstrate this.

CURRENT THREATS

We have highlighted the problems under specific habitats and species, but certain themes recur.

Loss of habitat continues to occur for a range of reasons detailed below.

General

- Lack of legislation providing protection for habitats or most plants and animals.
- Increase in the population, putting pressure in a variety of ways, on remaining good quality habitats.
- Air pollution, including increasing motor vehicle emissions – most notably leading to an increase in nitrogen in the atmosphere.
- Water and soil pollution including that caused by artificial chemical applications in a wide range of situations in Guernsey.
- New developments – sometimes in stages, with land purchased and abandoned or

INTRODUCTION

dumped on so that important habitats are degraded before being developed.

- Modern digger machinery, which enables the destruction of habitats in a matter of hours.
- A dramatic increase in the practice of using plots, containing one house and garden, for the building of several houses by demolishing the house and bulldozing the garden, thus removing a significant area of mixed habitats, such as old lawns, ponds, and trees, and sources of nectar such as herbaceous plants and shrubs.
- Continued shrinking of habitat and loss of adjacent habitats, leading to a loss of complementary services for many animals.
- Non-native tree species still being used in large-scale planting schemes.

Invasive non-native species (INNS) out competing, and therefore replacing, native species. Problem plants include:

- Canadian waterweed in shallow waters in certain quarries.
- Cock's eggs in unmanaged sand dune grassland in the north-west of Guernsey.
- Japanese knotweed in unmanaged areas, especially where damp.
- Japanese wireweed, *Sargassum muticum*, is increasingly a problem in marine habitats.
- New Zealand pigmyweed.
- Parrot's feathers in ponds and wetlands.
- Sour fig, mainly affecting coastal grassland.
- Three-cornered garlic or stinking onion is replacing native bluebells in wooded areas.

Recently, pampas grass has started to appear all over Guernsey outside gardens and is now of concern. Gazanias and *Osteospermums* are also starting to spread, but as yet do not appear to pose a threat – these last are responding to increasing temperatures.

Problem non-native animals include:

- hybrid mallard ducks which have decimated pond ecosystems in the last 15 years
- rats and feral cats

Introduced hedgehogs and smooth newts do not seem to have posed a threat for pre-existing

natives, although hedgehogs can be a problem to ground-nesting birds.

Last, but not least, the effects of global climate change leading to an increase in average sea and temperatures.

Marine

- Marine pollution.
- Rubbish in the sea such as discarded plastic bags, bottles, fishing gear and bits of plastic.
- Industrialised fishing – most notably pair trawling and scallop dredging.
- Over-collection of native species for food.

Permanent grasslands

- Use of damaging intensive agricultural practices for grassland management – in particular the applications of artificial chemicals and repeated ploughing.
- Decline in grazing.
- Tree planting on areas of marginal agricultural land, which is very often where the remaining pockets of unimproved or semi-improved grassland exist.
- Field-raising, through dumping.
- Drainage of wetlands.
- Manicuring of grasslands, by intensive mowing and through herbicide use. For example, in unofficial 'extensions to curtilage' or where land is managed for sports.

THE FUTURE

Only recently are 'ecosystem services' being quantified - biodiversity has historically not been valued, except in qualitative terms. This needs to become a core part of planning for the future of the Island.

The 1992 (Rio) Convention on Biological Diversity has been extended to every country in the world, except Guernsey, the Holy See, Andorra and the USA (which, however, follows most of the protocols). This convention encourages signatories to set up Biodiversity Action Plans for their territories. We hope that one result of this book will be the implementation of a biodiversity strategy in

INTRODUCTION

Guernsey, which will enable us to have the Convention extended to the Bailiwick, removing us from the embarrassing position of not having an almost universal convention being applied here.

Greater controls on building on green land and gardens are needed. Continued development of land is not a realistic option for long-term sustainability.

The **protection** of habitats and wild plants and animals is vital. The potential for destruction by diggers has already been highlighted. Some farming practices have long-lasting consequences: it is relatively easy, by ploughing, re-seeding, and applying herbicides and artificial fertilisers, to turn unimproved grassland into improved grassland. It is much more difficult to bring back diversity. It may take centuries to lower phosphate levels in soil to the original levels by harvesting and removing vegetation so that more delicate plants can establish and some habitats are more vulnerable than others. Derrick Wells, a well-known grassland expert, once commented that:

"It takes ten times as long to return dry grassland to a better state environmentally than it does for wet grassland."

Thus, good quality habitats that still exist are precious. In terms of conservation, the motto could be stated in a hierarchy of: **RETAIN, RETRIEVE, REPLACE**. That is:

FIRST PRIORITY: save and maintain good habitats

SECOND PRIORITY: focus on retrieving habitats from a state of degradation

THIRD PRIORITY: or finally, where the current habitats are of little value to nature and where time and funds allow, create new habitats, although never at the expense of existing good habitats.

Appropriate management needs to be a priority. Caring for good habitats lacks any newsworthiness, but is vital for providing refuges for species, particularly those under threat. **THIS IS A PLEA THEN FOR THE SLOW, PAINSTAKING WORK OF LAND MANAGEMENT THAT ENABLES MILLIONS OF INDIVIDUAL ANIMALS AND PLANTS TO SURVIVE.**

Returning degraded habitats to a good state may be a slow process, and again often lacks drama, but the increase in wild flowers, insects, birds and so forth is worth the effort. Thus, some scrub, that has colonised grassland and heath on the cliffs, can be returned to these habitats and, although this would be a long process overall, it would quickly attract some of the more mobile species. In the sea, after cessation of trawling and dredging, some habitats, most notably maerl, can take in excess of 25 years to recover (Ryan & Bailey, 2012).

Creating new habitats tends to be newsworthy and so attracts more funds, but at the expense of more critically important work. With new woodland plantings, it is vital that fields are surveyed and checked for signs of diversity before planting trees. Valuable grassland sites continue to be lost this way.

The pressures in the future are not known, but population pressure, climate change, industrial fishing and farming processes must be the most likely to continue to cause extinctions locally.

Sea-level rise will arguably be one of the most serious problems for the Islands. There is nowhere for coastal habitats to move to around the low-lying coasts and pressures on land will increase as the area reduces.

GUERNSEY HABITAT SURVEY

Table 1. Areas of Vegetation Types in Guernsey from IDC Phase 1 Habitat Surveys

Habitat Classification	1999		2010		Change in Area	Change in % of GSY's land
	Area (ha)	% of land	Area (ha)	% of land		
Semi Natural Broadleaved Woodland	131.38	2.07	197.58	3.11	66.20	1.04
Planted Broadleaved Woodland (and orchards)	56.17	0.88	120.92	1.90	64.75	1.02
Planted Coniferous Woodland	20.93	0.33	26.05	0.41	5.12	0.08
Planted Mixed Woodland	8.44	0.13	34.88	0.55	26.44	0.42
Parkland	19.54	0.31	55.94	0.88	36.40	0.57
Dense Scrub	234.53	3.69	314.74	4.95	80.21	1.26
Unimproved Grassland	3.11	0.05	2.05	0.03	-1.05	-0.02
Semi-improved Grassland	351.81	5.53	192.30	3.02	-159.51	-2.51
Improved Grassland	1531.35	24.08	1138.08	17.90	-393.26	-6.18
Marshy Grassland	90.74	1.43	60.95	0.96	-29.79	-0.47
Continuous Bracken	103.63	1.63	101.42	1.59	-2.21	-0.03
Tall Ruderal	54.10	0.85	32.05	0.50	-22.05	-0.35
Swamp	14.54	0.23	15.24	0.24	0.70	0.01
Standing Water (+Brackish)	41.62	0.65	50.26	0.79	8.64	0.14
Saltmarsh	0.45	0.01	1.55	0.02	1.10	0.02
Shingle	13.45	0.21	16.31	0.26	2.86	0.04
Rock	15.97	0.25	11.99	0.19	-3.98	-0.06
Dune Slack	2.86	0.05	0.47	0.01	-2.39	-0.04
Dune Grassland	74.29	1.17	84.36	1.33	10.08	0.16
Dune Heath	1.27	0.02	0.00	0.00	-1.27	-0.02
Dune Scrub	27.28	0.43	27.37	0.43	0.09	0.00
Open Dune	1.29	0.02	1.36	0.02	0.07	0.00
Hard Cliff	27.57	0.43	58.50	0.92	30.93	0.49
Soft Cliff	5.02	0.08	2.57	0.04	-2.45	-0.04
Coastal Grassland	61.60	0.97	74.03	1.16	12.43	0.20
Quarry	23.22	0.37	5.83	0.09	-17.39	-0.27
Coastal Heathland	2.70	0.04	1.57	0.02	-1.12	-0.02
Arable Land	388.81	9.9	333	7.8	-55.81	-2.1
Arable Land – Short-term Ley*	0	0	556	13.0	556	13.0
Amenity Grassland	564.74	8.88	687.18	10.81	122.44	1.93
Bare Ground	47.39	0.75	41.48	0.65	-5.90	-0.09
Sand / Mud	0.00	0.00	4.25	0.07	4.25	0.07
Hottentot-fig	0.00	0.00	4.13	0.07	4.13	0.07
Brownfield	0.00	0.00	32.33	0.51	32.33	0.51
Marginal Vegetation	0.00	0.00	0.66	0.01	0.66	0.01
Total	3919	61.64	4287	67.42	475.03	5.77

* Note that the 1999 survey included Short-term Leys in Improved Grassland

CONCLUSION: THE THREATS TO GUERNSEY'S BIODIVERSITY

The big one is climate change, but probably the one we will least be able to control, which is why it is at the bottom of the lists. Its effects are not entirely predictable for example, how quickly will sea level rise, will we have colder or warmer winters, when will we have rain, and will the summers be generally cooler or warmer? The changes to our weather depend on what happens to the Gulf and Jet Streams.

Marine

1. Over-fishing – needs controls to prevent collapse of fish stocks.
2. Damaging types of fishing such as pair-trawlers and scallop-dredgers – affect not just fish, but marine mammals, diverse habitats such as maerl beds.
3. Noise pollution – effect on marine animals e.g. cetaceans.
4. Chemical pollution – wide range of effects.
5. Coastal development.
6. Dredging.
7. Climate change:
 - a. loss of cooler-water species leading to wholesale changes in marine food-webs
 - b. loss of birds at the southern edge of their range e.g. puffins

Beaches and cliffs

1. Development.
2. Rock-armouring.
3. Chemical pollution.
4. Dogs and people disturbing birds, common examples are, dog-walking, coasteering, hang-gliding in important feeding and breeding areas for birds at critical times.
5. Motorbike scrambling on beaches damaging wildlife on the rocks as well as disturbing birds.
6. Sand-racing and ploughing competitions compacting sand and damaging sand dwelling wildlife.
7. Uncontrolled exploitation of shell-fish which is a newly emerging threat to species such as razor shells).
8. Stone-turning without replacement during ormering.
9. Excessive and/or extensive bait-digging.
10. Climate change:
 - a. sea level rise will affect all beaches
 - b. cooler-water species will die off
 - c. possible problems with invasive non-natives

Terrestrial

1. Development, especially on highly-diverse or scarce habitats.
2. Building.
3. Tarmacing/concreting.
4. Land-raising - often carried out to gain income from tipping.
5. Tipping.
6. Drainage- loss of wetlands.
7. Intensive agriculture- wide range of effects.

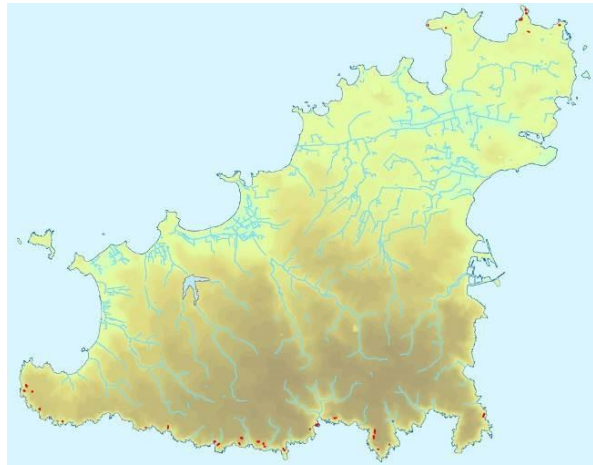
CONCLUSION: THE THREATS TO GUERNSEY'S BIODIVERSITY

8. Loss of traditional management:
 - a. lack of grazing – loss of important, diverse habitats and associated wildlife and effects on range of other species –loss of food sources, nesting sites and materials – much of these areas have become unmanaged scrub or poorly managed grassland that are mown either too much or too late.
 - b. lack of traditional arable practices- loss of weed flowers and seeds
 - c. lack of scrub management – loss of diverse structure
9. Recreational uses where they:
 - a. involve using fertilisers, pesticides and herbicides; and/or
 - b. take over parts of valuable habitats and reduce their diversity
10. Over-management, for example, mowing grassland as lawns, extension of curtilage
11. Tree-planting on unimproved or semi-improved grassland
12. Clearing or weed killing of species-rich walls or re-pointing with cement-mortar
13. Climate change leading to:
 - a. the spread of invasive non-native species, for example, sour fig, however more are emerging all the time, such as pampas grass, emerging possibilities include Gazania, Bermuda buttercup, fuchsia, Dimorphotheca.
 - b. sea level rise squeezing out the coastal habitats is a concern as currently most of local wildlife is in, or depends on these regions.

HEATH



Heath near Fort Doyle



Distribution of heath in Guernsey in 2010, indicated in red

HABITAT

Heaths are areas of acid mineral soil with low nutrient levels where the vegetation is dominated by heathers, often in association with gorse. This is now a rare habitat in Guernsey, having declined massively in the last century. It was once a common feature of the cliffs and cliff valleys:

“from Fermain Bay to Pleinmont being almost uninterrupted wild land covered with heather, furze and bracken” (*Smith, 1879*)

Now, mere remnants are left as many patches are tiny, often less than 10 metres across. The only larger areas are at Pleinmont, which has increased year-on-year since La Société Guernesiaise took over managing the land, and Fort Doyle, which is in poor condition at present.

Typical plants

Typical plants include:

- bell heather, *Erica cinerea*
- common heather, *Calluna vulgaris*, is much rarer here than bell heather
- tormentil, *Potentilla erecta*.

Lichens are often abundant, especially the grey *Cladonia* species.

TYPICAL PLANTS



Bell heather, *Erica cinerea*.



Common heather, *Calluna vulgaris*, is much rarer on heath than bell heather.



Tormentil. *Potentilla erecta*

HEATH

HEATH MOSSES AND LICHENS

Lichens are often abundant in heath land, particularly the *Cladonia* species.



The moss, *Polytrichum juniperinum*, seen here with male reproductive structures.



Cladonia spp. at La Corbière



The moss-like lichen, *Cladonia chlorophaea*, with conical fruiting bodies

Typical animals

Invertebrates, such as Emperor moths, *Saturnia pavonia* and gorse shieldbugs, *Piezodorus lituratus*, feed on heather and gorse.

Dartford warblers, meadow pipits, linnets and skylarks all will nest in heathland.

HEATH ANIMALS

Invertebrate species that feed on heather and gorse.



Emperor moth caterpillar, *Saturnia pavonia*



Female emperor moth

HEATH

MANAGEMENT REQUIREMENTS

Heathland needs low-intensity grazing by cows, traditional pony breeds, sheep or goats – cows are particularly good at providing a range of micro-habitats. Where this is not available, cutting and taking the arisings will ensure their survival, albeit much less beneficial for associated animals.

THREATS TO THIS HABITAT

- Cessation of management: particularly grazing by domestic animals and cutting of gorse for fuel.
- The general increase in nitrous oxides in the atmosphere leading to increased nitrates and nitrites in the soil.

HEATH

Ulex gallii

WESTERN GORSE

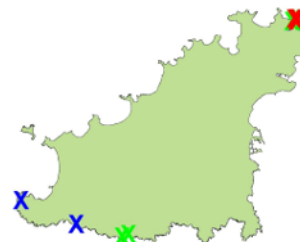


Critically Endangered

Habitat – Heaths and grassy places on acid soils.

Comments – Apart from one or two scattered plants on the cliffs, this is now only found at Fort Doyle in the shrinking area of heath there. Marquand recorded it as generally distributed but generally less common than *Ulex europaeus*. Babington listed it as *Ulex nanus* and stated it was frequent.

Threats – See under Heath.



Pedicularis sylvatica

LOUSEWORT



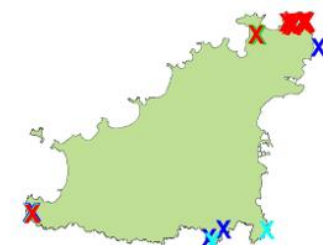
Vulnerable

Habitat – Damp heaths, marshes and bogs; on peaty soils.

Comments – It is now found in a few seasonally-damp sites in the fragments of heathland that survive: these are a tiny fraction of its former distribution.

Marquand remarked that it was "*rather common in moist heaths and damp pastures, especially in the south: plentiful on the cliffs in suitable locations*".

Threats – See under Heath, Grasslands, Coastal Grassland, and Springs and Flushes.



Ornithopus pinnatus

ORANGE BIRD'S-FOOT



Endangered

Habitat – Short turf and open ground on sandy soil. Locally also on heaths.

Comments – Recent records are nearly all from heath and coastal grassland areas in the north-east of L'Ancrese Common.

Marquand recorded it as "*...rare. Occurs in many parts of L'Ancrese Common, especially on the western side, but also about Fort Doyle; usually in small quantity in each spot...in the hedge of a land behind Vale School*".

Threats – See under Grasslands and Heaths– in particular needs grazing to keep the turf short, open and stop the invasion of shrubs such as gorse.



HEATH

Anthus pratensis

MEADOW PIPET



Habitat – Heaths, also coastal grassland, farmland and even on the beaches feeding.

Comments – Now a scarce breeder. Numbers are increased by migrants. Smith: “resident and breeds...but by no means as numerous as the tree pipit is during the summer”. The tree pipit was then a very numerous summer visitor, but is now no longer seen.

Bisson: “Breeds; common resident, migrant and winter visitor”.

Threats – Loss of good species-rich grassland and heath; also, diverse species-rich farm habitats. Disturbance of nest sites and feeding birds by dogs.

★
PLACEHOLDER
PICTURE

Saxicola rubicola

STONECHAT



Habitat – Heaths, also stable sand dune grassland, coastal grassland and hedgebanks.

Comments – Now a scarce breeder.

Smith: “Numerous and regular summer visitant...but I do not think any remain throughout the winter. Both in the Vale and on the Cliffs...the Stonechat is very common”.

Bisson: “Breeds; fairly common resident and migrant. Breeding numbers reduced due to recent hard winters”.

Threats – Loss of heath and good species-rich grassland. Disturbance of nest sites and feeding birds by dogs.



Linaria cannabina

COMMON LINNET



Habitat – Heaths, also stable sand dune grassland, coastal grassland and hedgebanks. It needs a mosaic of species-rich farm and coastal habitats to provide food and nesting sites.

Comments – Now a scarce breeder. These were “the most numerous birds in the islands, outnumbering even the House Sparrow” according to Smith.

Bisson: “Breeds; very common summer visitant and migrant. Not common in the winter.”

Threats – Loss of good species-rich grassland and heath, as well as diverse species-rich farm habitats. Disturbance of nest sites and feeding birds by dogs.

★
PLACEHOLDER
PICTURE

GRASSLANDS



Grasslands cover the majority of Guernsey

Grassland Habitat	Soil Type	Wetness
Dune grassland	Sandy	Dry
Dune slack	Sandy	Wet
Coastal grassland	Gravelly to peaty	Dry
Unimproved dry grassland	Loamy	Dry
Marshy grassland	Loamy-peaty; rarely sandy	Wet
Swamp	Loamy-peaty	Under water for part of the year

Table 2: Influence of soil type and moisture on grasslands

HABITAT

These habitats, where grasses form the largest proportion of the plant cover, occur over a wide range of conditions from wet to dry, acid to alkaline, sandy to clayey and saline. Each has a characteristic set of grasses and other plant species. Grassland can be divided into three basic categories:

1. Unimproved grassland
2. Semi-improved grassland
3. Improved grassland.

Unimproved grassland is the product of traditional land management by our ancestors over many years, sometimes centuries. It is incredibly species-rich and has not been artificially fertilised, ploughed or reseeded (see page XXX). It is truly permanent grassland and generally of lower nutrient status.

Semi-improved grassland has been improved, mainly by fertilizers, in the past (see page XXX). Where the land is more fertile, grasses will tend to out-compete other species, except the most vigorous, so the proportion of grasses is greater. Different species may appear and other plants are fewer in both number and variety.

Improved grassland has had recent applications of fertiliser and has often been ploughed up and reseeded. It is characterised by a low species diversity and often dominance by rye-grass and coarse, vigorous plants where not killed with herbicides.

The grasses are the green 'background' to a tapestry of flowers in the most diverse, species-rich habitats or they are either the sole type of plant present or one of two or three species where they are sown as short-term leys. The latter, along with some amenity grasslands, are not only fertilised, but also sprayed with herbicide to maintain the single or limited species sward and show in the landscape as an area of plain, often darker or brighter green when compared to diverse, species-rich areas. Any of these grassland types can be modified by farming or management practices.

While many Channel Islands' grasslands are now managed by humans, prior to the advent of agriculture, species-rich grasslands existed and were maintained by herds of wild grazing and browsing animals roaming the landscape. This natural grazing management still exists in North American mountains, where deer maintain glades of marshy grassland around springs and likewise in the Serengeti in Africa, where herbivores include wildebeest, zebras, gazelles, impalas, buffalos, giraffes and elephants.

In Guernsey today, rabbits graze and so maintain most remaining areas of good quality stable sand dune grassland and coastal grassland. Other grasslands are managed either through grazing by cows, horses, goats, and, increasingly, sheep, or by mowing, including for hay or silage. If management ceases, it does not take long before scrub and bracken invade.

GRASSLANDS

COASTAL GRASSLAND

Bluebells in species-rich coastal grassland at Pleinmont.



UNIMPROVED GRASSLANDS

These are *permanent* grasslands that have either never been subject to agricultural improvement or where that improvement was insignificant and the effects have now disappeared. They are usually managed with either no fertilizer or low inputs of natural fertilizers such as farmyard manure. Cover of rye-grasses and white clover is less than 10% and the sward is generally species-rich with more than 15 species per square metre. Cover of wildflowers and sedges is generally over 30%, excluding white clover, creeping buttercup and 'injurious' weed.

Typical plants

Typically, there will be a diverse range of grass species, which, in Guernsey, may include crested hair-grass, heath-grass, silver hair-grass, early hair-grass, early meadow-grass, smooth meadow-grass, velvet bent and/or meadow brome as well as the more common grasses that are also found in semi-improved grassland such as red fescue, cock's-foot, rough meadow-grass, common bent, creeping bent, and sweet vernal-grass. The varieties will depend on how wet or dry the area is. A variety of sedges is a valuable indicator of good quality grasslands as are a variety of fungi in drier areas, given their vulnerability to ploughing and artificial fertilisers.

GRASSLANDS

Typical animals

Bumblebees, various solitary bees and hoverflies are attracted by the diversity of flowers, which provide nectar and pollen for much of the year.

Some solitary bees, such as *Andrena* species, make burrows in permanent grassland as well as foraging. Various ants, such as the yellow meadow ant, *Lasius flavus*, are important in the ecology of permanent grassland. Ant hills provide raised, less vegetated areas where the soil temperature is often warmer and this is important for species such as the field grasshopper. Great green bush-cricket are found in grassland as nymphs, migrating to bushes as adults. Long-winged coneheads (a bush-cricket) live in long grassland and probably typify grassland cut once late in the season (July/August) or grazed land. Bugs such as *Stenodema* spp., grass moths, small coppers, common blues, meadow browns, gatekeepers, and speckled woods (the latter two needing

some shady grassland areas) all inhabit grassland, again mostly either that which is grazed or not cut too frequently.

A variety of beetles need to live in the soil of permanent grassland during some part of their lifespan (see also the section on Dung).

Insect larvae, such as chafer grubs and leatherjackets, worms and other soil fauna found in the permanent grassland soil, are sought out by a variety of birds, including starlings, blackbirds, robins, crows, herring gulls, magpies and song thrushes. Adult invertebrates that are dependent on permanent grasslands, are important food for other invertebrates, along with many vertebrates: common frogs, slow-worms, greater white-toothed shrews, hedgehogs, swallows, kestrels and other birds.

Thus, unimproved grasslands provide rich sites for invertebrate and vertebrate life. Small vertebrates, such as Guernsey voles, wood mice, greater white-toothed shrews, slow-worms and

UNIMPROVED GRASSLAND BUTTERFLIES



Common blue, *Polyommatus icarus*

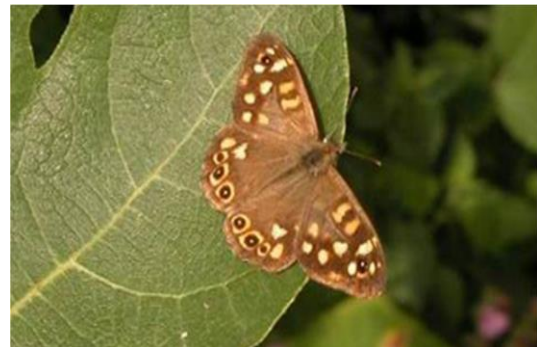


Small copper, *Lycaena phlaeus*



Gatekeeper, *Pyronia tythonus*

Photo: Richard Lord



Speckled wood, *Pararge aegeria*

GRASSLANDS

common frogs, build up particularly good populations in grazed permanent grasslands. They benefit from the presence of tussocky vegetation and bushes to avoid predation. These animals in turn benefit predators such as barn owls and kestrels.

Meadow pipits and skylarks both nest in grasslands.

Brent geese and wigeon graze permanent grassland by the coast, especially the Colin Best Reserve, as this is one of the largest areas of grassland with minimal human disturbance in Guernsey. Grazing wigeon are especially vulnerable to human disturbance (see http://www.ukmarinesac.org.uk/communities/zoster/z3_2.htm).

Permanent grassland has been shown to have particular significance for grey long-eared bats for feeding, as they mostly hunt moths over such areas, although they will also feed on crane flies and beetles. The lack of ploughing means that moth, crane fly and beetle eggs, larvae and pupae are not destroyed, especially as some moths, along with crane flies and some beetles, pupate underground. The more diverse the grassland, the more variety of these species there is likely to be, providing a greater range of food over a longer period. Hay meadows (cut later than silage fields) and permanent pasture traditionally provide good foraging as these complemented each other in terms of food supply. When the hay was cut, the bats could turn to hunting over pasture. Silage fields are now the dominant form of grassland management in the Island. These provide poor opportunities: most have few insects, being leys. Additionally, when they have been cut, there are few suitable areas of grassland now available to which the bats can turn for food.

MANAGEMENT REQUIREMENTS

Grasslands need management, whether through grazing or cutting.

Where cut, in order to ensure the survival of a diverse range of plants, the cuttings need to be collected and removed, ideally for hay as the tuning and drying process allows plants to drop seed and animals to escape. Where hay cutting

is not possible, then arranging for the cuttings to be removed after mowing will help maintain plant diversity and cutting from the centre outwards or from one side towards a safe 'border' will allow animals to escape. Only on very exposed dry sites can the cuttings be left to dry up and blow away.

Timing is important and will vary with the degree of wetness. Dry permanent grasslands, often on dunes or coastal cliffs in Guernsey, are best grazed if possible, when the grass is fresher in spring (especially on dunes, which dry up faster than other habitats). Traditionally, they would probably have been grazed again in the autumn and winter, when the grass had been refreshed by rain.

Wet meadows cut for hay are best left until mid-to late summer when the plants have set seed and most insects have matured. This is ideally followed by grazing when the grass has grown again in the autumn. They can alternatively be grazed as the only method of management and this produces a different, but still valuable, flora.

Maintenance of some openness in the sward is good (see the section on Bare Ground). Grazing will help with this.

It is important to avoid the use of Ivermectin for treatment of cows (see section on Dung).

THREATS TO THIS HABITAT

Species-rich, permanent grasslands are not considered high enough yielding for modern intensive farming or considered desirable for modern recreation. However, the damage to the long-term soil structure, the increased rate of soil depletion, the loss of soil flora and fauna, and fertiliser run-off in intensive regimes, along with the loss of biodiversity (and any damage to human and animal health), are often not considered.

Damaging processes include:

1. use of artificial fertilisers
2. use of lime, especially as 'nitrochalk' which is a combined fertiliser and lime
3. use of slurry
4. use of herbicides
5. use of pesticides

GRASSLANDS

6. ploughing and re-sowing fields with a limited range of very productive species
7. drainage of wet ground
8. field-raising
9. the shift in timing of hay-making or from hay-making to silage.

Overgrazing can lead to a loss of species as can under-grazing, which leads to rank vegetation.

Conversely, lack of management or abandonment can be equally damaging with brambles, bracken or tree saplings taking hold and eventually shading out the grassland until it disappears under woodland or scrub. Coastal grassland and stable sand dune grassland has particularly suffered from abandonment of traditional management. In the past the scrub was kept at bay because domestic animals were grazed, and the scrub was often cut for fuel.

Cutting and leaving cuttings leads to the loss of small and delicate plants while coarse grasses dominate. Where infrequently cut, these grasses will be joined by the likes of hogweed, nettles and thistles. Strimmers or modern mowers with no collection boxes - as they are viewed as saving time in management - are usually the reason. There is a lack of awareness of the wider implications.

Other large-scale threats to good-quality grasslands in Guernsey include the following: dumping; land-raising and levelling; building;

use of unimproved grasslands as amenity areas; extension of curtilage; and the spread of invasive non-native plants.

On a minor scale, the infilling of small hollows with grass cuttings and covering bare areas leads to a loss of microhabitats - these are often of significant value to invertebrates.

Additionally, tree planting is a local threat as, once established, they shade out the majority of the flora. A number of diverse wet and dry grasslands have been lost in recent years in this manner. This can be avoided by a survey being carried out before if the area is being considered for planting and, if it is a species-rich habitat, planting the trees elsewhere.

OPPORTUNITIES AND OBSTACLES

Education about the following:

1. The value of unimproved grasslands
2. The importance of conserving these areas
3. The damaging effects of artificial chemicals.

Encouraging improvement of poorly-managed grasslands by:

- a. grazing, especially on the cliffs and other open coastal areas e.g. dunes
- b. hay cutting of wet meadows
- c. removing cuttings after mowing.

THREATS TO GRASSLAND HABITATS



Formerly species-rich dune grassland near a golf club that has been mown and fertilised to provide easy access to the fairway and to look professionally maintained.



Dune grassland near the Star Fort at Pembroke that has been mowed in March, but the cuttings, left as a mulch, favour coarse grass growth.

GRASSLANDS

Unfortunately, many schemes aimed at improving neglected or modern intensively-managed grasslands are at risk of being abandoned due to a lack of success in the short-term. Indeed, it may be only possible to create a 'shadow' of the former habitat as increasing the number of flowering plants can prove frustratingly elusive, depending on the history of the site. Creating a flower-rich sward in these circumstances may involve considerable effort and expense, including: removing topsoil to reduce fertility; preparing the soil and planting appropriate wild flower seeds; and controlling aggressive weeds.

The reasons behind this difficulty include:

- Long-term increase in soil fertility due to the application of phosphates, which remain in the soil for up to a couple of thousand years or more, depending on the pH of the soil,

preventing the restoration of the natural balance.

- The loss of soil flora and fauna, including the mycorrhizal fungi.

Many plants have associated mycorrhizal fungi. The latter are important for the health and survival of 'their' plants, helping them absorb nutrients, survive drought and resist soil-borne diseases. These fungi may also be vital for germination, such as is the case for most, if not all, orchids. Fungi are destroyed by ploughing and are thought to be particularly sensitive to artificial fertilisers and so may take a long time to return once 'improvement' has ceased.

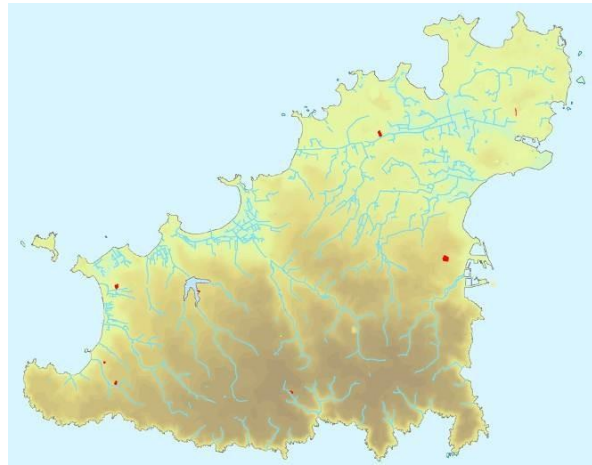
GRASSLANDS

<p><i>Sturnus vulgaris</i> STARLING</p>  <p>Habitat – Permanent grasslands and strandline, holes in trees and roof gaps under tiles for nesting.</p> <p>Comments – Now an uncommon breeder.</p> <p>Smith: <i>"sometimes very numerous in autumn, but those remaining throughout the year and breeding in summer are certainly very few in number"</i>.</p> <p>Bisson: <i>"Breeds; very common resident, migrant and winter visitor."</i></p> <p>Threats – See Grasslands and Intertidal Sand</p> <p>*The breeding population in the UK is listed as vulnerable.</p>	 <p>PLACEHOLDER PICTURE</p>
<p><i>Turdus viscivorus</i> MISTLE THRUSH</p>  <p>Habitat – Permanent grasslands and open deciduous woodland (species-rich parkland is ideal).</p> <p>Comments – Extinct as a breeder.</p> <p>Smith: <i>"has greatly increased in numbers in Guernsey, especially within the last few years"</i>. In the market in autumn it was sold for food for 4p each. Fieldfares were the same price; blackbirds, redwings, starlings, common thrushes and an occasional ring ouzel sold at 4p a couple.</p> <p>Bisson: <i>"Breeds; not common resident and migrant."</i></p> <p>Threats – Loss of permanent species-rich grassland in parks and open areas with trees. Air pollution may be a factor.</p>	 <p>PLACEHOLDER PICTURE</p>
<p><i>Turdus philomelos</i> SONG THRUSH</p>  <p>Habitat – Permanent grasslands and open deciduous woodland (species-rich gardens are also good habitats).</p> <p>Comments – Smith: <i>"Very common ...every available stone seems made use of, and to considerable purpose, to judge from the numbers of snail shells to be found about"</i>. In the market in autumn it was sold for food for 4p a couple.</p> <p>Bisson: <i>"Breeds; very common resident. Fairly common migrant with some wintering"</i> Now certainly much less common, but seems to have recovered from a decline in the 1990s.</p> <p>Threats – Loss of permanent species-rich grassland in gardens and open areas with trees. Use of metaldehyde slug pellets. Air pollution may be a factor.</p>	

UNIMPROVED DRY GRASSLAND



Candie Cemetery, St Peter Port



Distribution of Unimproved Dry Grassland in Guernsey in 2010, indicated in red

HABITAT

The 2018 habitat survey found no areas of unimproved dry grassland. Even ten years ago, it was so rare that Candie Cemetery, some of the parish churchyards and grassy hedgebanks were the largest areas remaining. It is rich in plants and insects and it has much in common with coastal and dune grasslands in species composition.

This habitat would have been much more common before the advent of artificial fertilisers.

Typical plants

Typical plants include:

- bulbous buttercup*
- celandine*
- common bent*
- cat's-ear*
- common dog-violet
- common sorrel*
- dandelion
- field wood-rush (also called 'Good Friday grass')*
- red fescue*
- ribwort plantain*
- rough meadow-grass*
- silver hair-grass
- sweet vernal-grass*.

Depending on local conditions such as regularity of cutting, the moisture content and the pH of the soil etc., other typical plants include:

- autumn ladies' tresses
- black medick*
- common knapweed
- common bird's-foot trefoil
- creeping and slender St John's-wort
- germander speedwell*
- ladies' bedstraw
- lesser hawkbit
- ox-eye daisy
- primrose
- self-heal*
- sheep's-bit
- sheep's sorrel
- smooth hawk's-beard
- heath milkwort
- tormentil
- wild carrot
- wild thyme
- yarrow*.

The starred (*) plant species can also be found in semi-improved conditions.

Sometimes the two species of spotted-orchids can be found, as they will tolerate quite dry areas.

UNIMPROVED DRY GRASSLAND

Grassland fungi, such as spindles, waxcaps and field mushrooms, are found where the grassland is generally short in the autumn.

Guernsey compares favourably with areas such as Devon, where species-rich grasslands will generally support between 20 and 40 species. The grassland in Candie Cemetery has supported between 50 and 60 species, not including fungi. Six waxcap species have been found here, an indication of just how special this area was.

Typical animals

See Grasslands [page XXX](#)

MANAGEMENT REQUIREMENTS

See Grasslands [page XXX](#)

THREATS TO THIS HABITAT

See Grasslands. Grassy hedgebanks have particular problems (see Hedgebanks section).



UNIMPROVED DRY GRASSLAND

Hypericum perforatum

PERFORATE ST JOHN'S-WORT

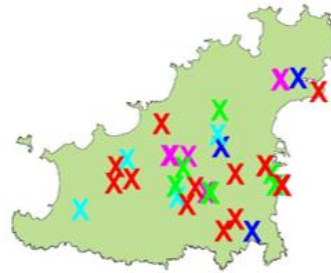


Habitat – Unimproved dry grassland, hedgebanks and open woodland.

Comments – Now found mostly as small, isolated groups- the map indicates it is commoner than current records indicate- a number of these are quite old now and others only have one or two plants.

Marquand noted that it was "*rather common in all parts, but especially so in the interior, as at St. Andrew's, where it is quite plentiful in the hedges*".

Threats – See Grasslands and Hedgebanks



Danthonia decumbens

HEATH-GRASS



Habitat – Sandy or peaty, often damp soil, usually acid.

Comments – Recent records are often of a few plants at each site - occurring in marshy, dry unimproved, sand dune and coastal grassland. Marquand recorded it as "*rather common generally. Abundant on the cliffs in some places, and in some parts of L'Ancrese Common; occasional in hedges and pastures inland*".

Threats – See Grasslands, Stable Sand Dune Grassland and Coastal Grassland.



Conopodium majus

PIGNUT



Habitat – Permanent unimproved or semi-improved grasslands, hedgebanks, woodland.

Comments – Its known sites have been disappearing at an alarming rate in recent years, declining by more than 60% in the last 20 years. Its stronghold now is the Foulon Cemetery, where the grassland near the chapel is managed sympathetically.

Marquand described it as "*Rare. Occurs in the central and southern districts of the island in many places, chiefly in St Andrew's and St Martin's but, as a rule, only sparingly at each spot...*"

Threats – See Grasslands, Unimproved Dry Grassland, and Broadleaved Woodland. It is extremely vulnerable to ploughing and other "improvements" as well as neglect of grassland.



UNIMPROVED DRY GRASSLAND

Scorzoneroides autumnalis

AUTUMN HAWKBIT



Vulnerable

Habitat – Unimproved dry, coastal and stable sand dune grasslands.

Comments – Found on some west coast headlands, parts of L'Ancrese Common and a few grassland areas in St Peter Port.

Marquand recorded it as "*generally distributed and rather common in pastures, and on commons and waste ground*".

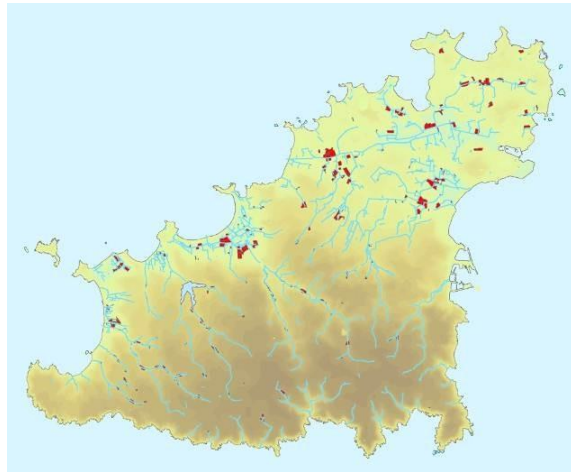
Threats – See Grasslands, Stable Sand Dune Grassland and Coastal Grassland.



UNIMPROVED AND SEMI-IMPROVED MARSHY GRASSLAND



A meadow in the Bridget Ozanne orchid fields



Distribution of Marshy Grassland in Guernsey in 2010, indicated in red

HABITAT

This is meadowland in damp areas characterised by such species as orchids, sedges and rushes. It is now found mostly in the coastal lowlands, but was formerly common in valleys inland.

This land was economically vital as traditional hay meadows supplying the local livestock with winter feed and autumn grazing. Much of this survived into the 20th century, but succumbed to changes in agricultural practice, most notably after the Second World War, although some had already disappeared under glasshouses in the previous fifty to hundred years. Drainage, followed by fertilising and ploughing, or building, destroyed all but a fraction. Not all is irreversible and removal of glasshouses has seen some land return to something akin its former state.

Sedges are important indicators of the least improved areas. Thus, the presence of the likes of common yellow-sedge, glaucous sedge, along with common sedge and carnation sedge in the wetter areas, are important pointers for biological diversity and a long period of stability. These highlight areas of utmost importance for conservation.

In Devon, some individual meadows can support over 100 species of plants, though this is exceptional. Here, where the fields are small, the best ones support in the region of 50-70 species.

Larger areas, such as La Claire Mare, support around 80-100 in total. Over these larger areas there are subtle changes in habitat, with standing water in winter in places and, in the case of La Claire Mare, increased salinity at the lowest point.

Marshy grassland is important within habitat mosaics, such as seashore, ponds, salt marshes, quarries, unimproved dry grassland and cliffs. These mosaics are especially valuable for many birds and insects: the range of habitats provides a continuous supply of food, along with nesting, resting and roosting sites.

Typical plants

Sweet vernal-grass and crested dog's-tail are the main grasses, with tall fescue forming the upper storey of the vegetation, as the flowering stems can be a metre or more tall.

The orchids, for many people, typify marshy grassland: the spotted-orchids, loose-flowered orchid and less common southern marsh-orchid. The loose-flowered orchid is not found wild in Britain, the Channel Islands being at the northern end of its range. At the beginning of the 20th century, Marquand commented that it was "*frequent in moist meadows in all parts of the Island, but especially about the Grande Mare and Vazon, where at the beginning of June, the fields are quite purple with these beautiful flowers.*" It appears somewhat earlier these days: flowering now in the middle of May and is certainly less

UNIMPROVED AND SEMI-IMPROVED MARSHY GRASSLAND

common than then as its habitat has shrunk greatly over the course of the 20th century.

Many species can cope with some improvement and indeed drier ground, but are most common in unimproved marshy grassland: these include meadow buttercup, ribwort plantain, common mouse-ear and greater birds-foot-trefoil (one of the food plants of the common blue butterfly). Most locally-occurring orchids can cope with a limited amount of improvement, but disappear once the land has gone beyond a critical level of change. It is not clear what is most damaging: artificial fertilisers and repeated ploughing have been cited; possibly because they kill off the mycorrhizal fungi on which most orchids depend for germination.

Tufted vetch can similarly cope with drier ground. This vetch, along with common fleabane and square-stalked St John's-wort, flowers later than most of the meadow plants and so can be missed by many visitors who go to see the orchids.

Some plants are exclusively wetland ones, such as soft-rush, amphibious bistort, yellow iris, lesser spearwort, galingale and hemlock water-dropwort. This last species can easily dominate and its roots are poisonous to cows and people. Hemlock water-dropwort is therefore designated a noxious weed under the Noxious Weeds (Guernsey) Law, 1952.

Ragged-robin and cuckooflower benefit especially where the meadows are grazed in autumn as they have flat rosettes of leaves and are easily overshadowed.

Typical animals

The great green bush cricket, long-winged conehead (both of which are found in dry unimproved and semi-improved grassland as well), long-bodied spiders, *Tetragnatha* spp., meadow browns and common blues breed in these grasslands, but their populations are affected by the timing of the cutting regime and limited by winter wet. Common frogs are found in marshy grassland outside the breeding season.

MANAGEMENT REQUIREMENTS

- See Grasslands: traditionally many would have been cut for hay, but some were grazed.
- Snipe, swallows, meadow pipit and a range of other birds feed in or over marshy grassland

THREATS TO THIS HABITAT

- See Grasslands [page XXX](#)

UNIMPROVED AND SEMI-IMPROVED MARSHY GRASSLAND

Ophioglossum vulgatum

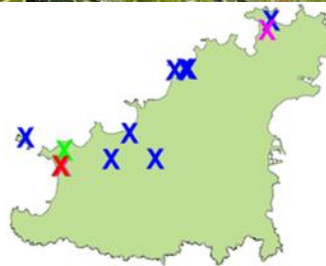
ADDER'S-TONGUE



Habitat – In Guernsey, this plant is found in damp grassland, which has not been ploughed or had any artificial fertilizers applied.

Comments – This small plant is nationally rare, partly due to loss of habitat. In Guernsey it is known only in two small areas at present. At the main site, consisting of three small wet meadows, it appears to be increasing. Marquand recorded it as occurring plentifully here and there in moist meadows in the low-lying districts of the Vale, Câtel, St Saviour's and on Lihou Island.

Threats – See Grasslands.



Trifolium fragiferum

STRAWBERRY CLOVER



Habitat – Short, rough grassland and grazed pastures, often on heavy or brackish soils.

Comments – Babington noted it as frequent. Marquand, some 60 years later, recorded it as rather rare and noted that he had not seen it in the south of the island, but in the north and north-west "it occurs in a great many places in damp meadows and pastures, especially near the sea". Few recent records as would be expected of a plant that would need shorter turf in permanent grasslands, as afforded by grazing.

Threats – See Marshy Grasslands.



Gallinago gallinago

SNIPE



Habitat – Marshy grassland; also bog.

Comments – Now a scarce winter visitor and migrant.

Smith: "Regular and rather numerous autumnal visitant... remaining through the winter".

Bisson: "Fairly common winter visitor and migrant."

Threats – Loss of marshy and boggy areas through drainage and development. Shooting, because it is already in decline and at risk of extinction.

*Near threatened (non-breeding), whilst breeding birds are not currently considered threatened in the UK

UNIMPROVED AND SEMI-IMPROVED MARSHY GRASSLAND

Gryllotalpa gryllotalpa

MOLE CRICKET



Habitat – It lives in wet sandy areas, often by streams, in glasshouses, gardens, vegetable plots and under lawns. It needs some access to bare soil (David and Edwards, 1995).

Comments –The majority of the records on the map are from a survey carried out in the 1990s. It appears to have gone from many of these areas, but another survey is needed to assess its current status.

Threats – Drainage, lack of cultivation. It can be a pest and has often been killed deliberately because of the damage it may do to glasshouse crops.



BOG



Typical scene in one of the wettest meadows, where water stands over the winter



Water horsetail, *Equisetum fluviatile*, in La Grande Mare

HABITAT

The wetter parts of wet meadows were very common before 1800, especially in the lowlands. This land was too wet for cultivation and was important for grazing in the summer or, where dry enough, would have been cut for hay.

Much marshland has been drained in the past three hundred years. The Napoleonic Wars had a great effect, with a garrison to feed on top of the normal population and problems with shipping in supplies. Some areas have been abandoned since the Second World War and become dominated by reeds (see Swamp) or scrub, mainly sallows.

Typical plants

Sharp-flowered rush, or probably the hybrid of this and jointed rush, forms a dark green back-ground as it is patch-forming. Common spike-rush will thrive in the wettest areas. Floating sweet-grass and creeping bent are typical grasses that do well in these conditions.

Other common plants in these areas include lesser spearwort, marsh-bedstraw, marsh pennywort, and water mint.

Due to the rarity of the habitat, any loss will affect plants that are at risk of extinction, such as creeping and tufted forget-me-nots, celery-leaved buttercup, common sedge, carnation sedge, water horsetail, water dock, and meadow brome. La Grande Mare is a prime example of such an area, which was formerly much wetter and had plants

found nowhere else in the Island, some of which are now extinct. Remaining areas of this marshland could still support such species, if reintroduced and the areas managed sensitively.

Typical animals

Beetles, such as water ladybirds, carabid beetles such as *Agonum marginatum* and many *Bembidion* species, and long-bodied spiders. Short-winged and long-winged cone heads, the green leafhopper, *Cicadella viridis*, and three species of ground hoppers.

Snipe and jack snipe winter here. Grey herons and little egrets visit open boggy areas when the tide is high.

MANAGEMENT REQUIREMENTS

See Grasslands.

THREATS TO THIS HABITAT

See Grasslands, especially drainage and invasive non-native plants.

BOG

Carex panicea

CARNATION SEDGE



Habitat – Wet, usually acid, heaths and moors, bogs.

Comments – Marquand remarked that this was "rare. Cliff valleys at St Martin's and the Forest. Abundant at Grande Mare. Meadows near Grandes Rocques." Now thoroughly rare, only two sites currently known, one with very few plants.

Threats – See Bogs, Grasslands and Springs and Flushes.



Potentilla palustris

MARSH CINQUEFOIL



Habitat – Fens, marshes and bogs.

Comments – Marquand commented that it was only found in La Grande Mare, "where the plant occurs in a good many places, so it is less likely ... to disappear when the marsh is drained."

Threats – Drainage of La Grande Mare caused it to become extinct, although small areas are still very wet.

This plant has a real chance to be re-introduced if sympathetic management could be undertaken to provide suitable conditions.

Photo: Kalerna (Wikipedia)



Equisetum fluviatile

WATER HORSETAIL

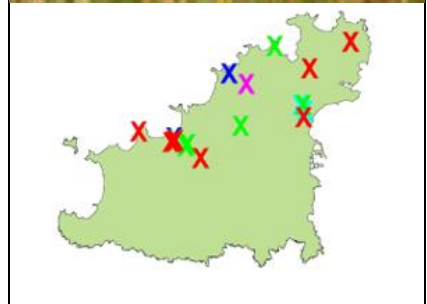


Habitat – In Guernsey, it is found in unimproved or semi-improved wet meadows where under water in the winter.

Comments – Marquand notes it as "frequent in wet meadows and swampy places, more especially in the low-lying districts."

Now only known from a few sites.

Threats – See Grasslands and Bogs.



BOG

Ranunculus hederaceus

IVY-LEAVED CROWFOOT



Endangered
Rare

Habitat – Muddy habitats and shallow fresh water, often temporary pools.

Comments – Occurs in two or three places now. Almost certainly needs unimproved permanent pasture to survive in good numbers. It probably also needs trampling / poaching to keep the ground open so that there is the space in the sward for it to germinate.

Marquand recorded it as "*Not common, though found in most parts of the Island by streams and rivulets, and on the boundaries small pools and ditches*".

Babington recorded it as "*frequent in wet places*". Annual or perennial.

Threats – See Grasslands and Bogs



Lymnocyptes minimus

JACK SNIPE



Vulnerable

Habitat – Bog and marshy grassland.

Comments – Scarce winter visitor and migrant.

Smith: "*Regular autumnal visitant... but never so numerous as the common snipe. A few may always be seen, however, hung up in the market with the common snipes through the autumn and winter*".

Bisson: "*Not common winter visitor and migrant*."

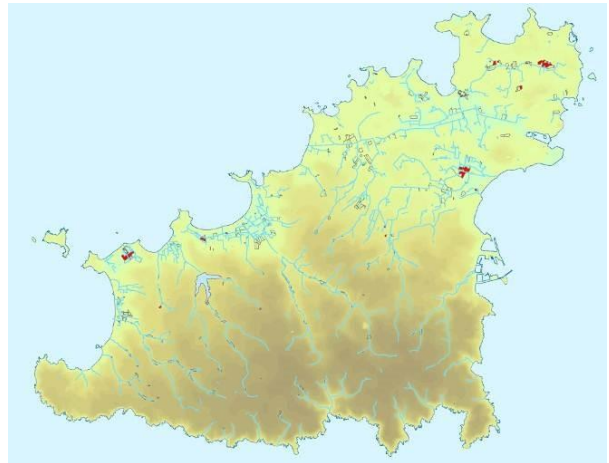
Threats – Loss of marshy and boggy areas through drainage and development.


PLACEHOLDER
PICTURE

REED BED



Reed bed growing on abandoned grazing land at Le Grand Pré Nature Reserve, Vale



Distribution of Reed Beds in Guernsey, in 2010, indicated in red

HABITAT

The story of reed beds in Guernsey is similar to that of the wetter parts of marshy grassland. Reeds had an economic importance when houses still had thatched roofs, but, as soon as pantiles replaced these, and with the increasing human population, many such areas were drained for more intensive agriculture. Subsequently many of these areas have been built on.

Recent reed beds have mostly originated from abandoned marshy grassland, which initially turns into a reed bed, ultimately becoming sallow scrub if no cutting is carried out. Where reeds dominate, there may be a limited range of plant species, but this habitat is valuable for a variety of birds and insects.

Typical plants

Common reed is the dominant species. With its more than two-metre stems remaining as dead markers through the winter and its purplish plumes of flowers, it is unmistakable.

Reed beds may include other characteristic plants such as:

- hemp-agrimony, which is exceptionally valuable for butterflies, bees and hoverflies in late summer when the pale pink fluffy flowers are massed at a time when not much else is available

- Sweet-grass, which is also characteristic of ponds and bogs.
- Water figwort, which is pollinated by both bees and wasps and again blooms late in the season with dark maroon hooded flowers that are a perfect size for the heads of wasp workers to fit neatly inside.

Ragged-robin and cuckooflower benefit especially where the meadows are grazed in autumn as they have flat rosettes of leaves and are easily overshadowed.

Typical animals

They are valuable roost sites for swallows and also for other birds on migration. Reed warblers breed in the summer and in Guernsey will use small patches of reeds, such as may be found at the bottom of cliff valleys. The increase in the habitat may lead to the establishment of more species of specialist birds; an indication of this may be the recent breeding of marsh harriers at the Colin Best Nature Reserve.

Moths breed here; areas under water may also have particular species not found in dryer swamps. Over 50 species of larger flies have been found in water traps at Le Grand Pré.

REED BED





MANAGEMENT REQUIREMENTS

Cutting every few years.

THREATS TO THIS HABITAT

See Grasslands, especially drainage.

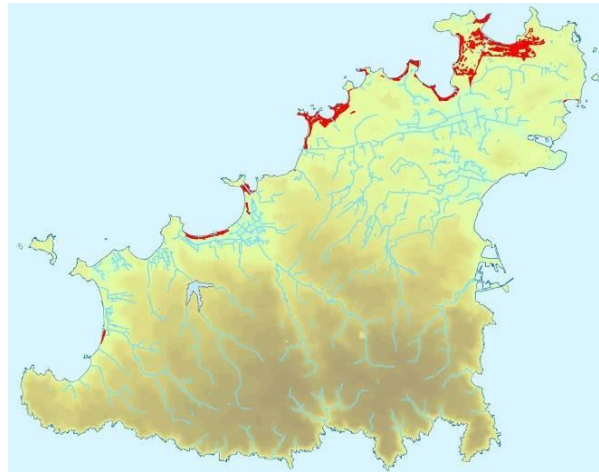
REED BED

<p><i>Emberiza schoeniclus</i> REED BUNTING</p>  <p>Habitat – Reed beds and shrubs on wet ground for breeding and species-rich farmland habitats for feeding.</p> <p>Comments – No records of breeding recently so considered extinct as a breeder. No record of it in Smith.</p> <p>Bisson: <i>"Breeds; scarce resident. First breeding record 1967. Not common winter visitor and migrant."</i></p> <p>Threats – Species-rich mosaic of habitats in farmland. Loss of wetland and big reed beds through drainage and improvement.</p>	 <p>PLACEHOLDER PICTURE</p>
<p><i>Acrocephalus scirpaceus</i> REED WARBLER</p>  <p>Habitat – Reed beds.</p> <p>Comments – Declining breeder. Smith: <i>"Rather numerous, but very local summer visitant"</i>. Le Grand Mare was a stronghold, with it also occurring at the Vale Pond and reed beds near L'Erée.</p> <p>Bisson: <i>"Breeds; fairly common summer visitor and migrant."</i></p> <p>Threats – Not entirely known, but reduction in insect populations and possible loss of reed bed quality and quantity.</p>	 <p>PLACEHOLDER PICTURE</p>

STABLE SAND DUNE GRASSLAND



L'Ancrese Common



Distribution of Stable Dune Grassland in Guernsey in 2010, indicated in red

HABITAT

Stable sand dunes, sometimes called *grey dunes*, are those parts of sand dunes away from the sea edge where the sand has been fixed by the growth of plants. There are strips of this habitat at the back of many beaches in Guernsey and large areas at Port Soif bay and L'Ancrese Common in the north of the Island. L'Ancrese is our largest remaining common, and is covered by a substantial area of wind-blown sand (at least partly post-Mediaeval as there were fields where there are now sand dunes).

These sand dunes are much richer in plants than the mobile dunes found at the sea edge. The open state is maintained by grazing animals. In Guernsey few cattle are now grazed on the dunes and the most intense grazing is that of rabbits. In the absence of grazing and mowing the vegetation coarsens and eventually becomes scrub. In the past, many areas of dune in Guernsey were quarried for sand, both to improve peaty soil for the growing industry and for building. These areas were then levelled and improved or built on.

In Guernsey, some areas of fixed dune, particularly at Port Soif and the western end of L'Ancrese Common, are calcareous due to the presence of seashells. These dunes have a different flora from more acidic dunes.

Typical plants

The dominant grass is red fescue. Often, sand sedge is very common. Other typical grasses include sweet vernal-grass and common bent. The following, many of which need short open turf to survive, are also typical plants:

- black medick
- bulbous buttercup
- changing forget-me-not
- common bird's-foot-trefoil
- common stork's-bill
- dwarf spurrey
- early forget-me-not
- lesser chickweed
- lesser hawkbit
- sea mouse-ear
- small hare's-ear - very scarce in the UK
- subterranean clover
- suffocated clover
- upright chickweed
- western clover
- wild thyme.

The bulbous perennials include:

- autumn squill
- sand crocus.

STABLE SAND DUNE GRASSLAND

Other plants more restricted to dunes, either due to their requirement for calcium or a sandy soil, are:

- bee orchid
- biting stonecrop
- crested hair-grass
- salad burnet
- spreading meadow-grass, which is sometimes recorded as and considered a sub-species of smooth meadow-grass
- spring-sedge.

Annuals and biennials such as:

- eyebright
- fairy flax
- knotted clover
- little mouse-ear
- pale flax
- rough clover
- small-flowered catchfly
- spring vetch
- thyme-leaved sandwort.

Dune grassland is also extremely rich in fungi.

Typical animals

Thousands of invertebrates! One of the most obvious is the white snail, *Theba pisana*, which spends the summer attached high up on plants on the dunes; it presumably climbs the plants to find cooler conditions than at the dune surface. This snail was introduced to Guernsey from the adjacent French coast by Mr Lukis in the 1850s. The shells of this and other snails are used as a

nesting site by the gold-fringed mason bee, *Osmia aurulenta*, which seals the mouth of the shell with dung. Additionally, bare sand is very important for certain insects and has been historically maintained by grazing and even some light pedestrian pressure!

Dune grassland is also important to many bird species, especially for foraging. It is the last habitat in Guernsey where skylarks used to nest. Meadow pipits are strongly associated with this habitat for breeding and feeding, as are stonechats and linnets where small areas of scrub are available for nesting. Slow-worms and small mammals are present. Solitary bees and bumblebees, especially the buff-tailed bumblebee, *Bombus terrestris*, feed on the diverse flowers.

MANAGEMENT REQUIREMENTS

See Grasslands, especially management by grazing.

THREATS TO THIS HABITAT

- See Grasslands, especially unsympathetic management for recreation purposes e.g. weed killing, fertilising and watering.
- Covering bare areas; infilling dips in the terrain with grass clippings.

STABLE SAND DUNE GRASSLAND

Milium vernale subsp. *sarniensis*

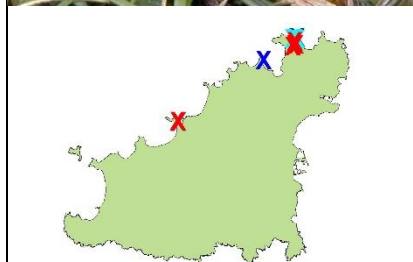
EARLY MILLET



Habitat – Short turf in sand dunes.

Comments – A supreme Guernsey rarity, and not found elsewhere in the British Isles. The Guernsey subspecies, found nowhere else, is unusual in being prostrate. Recent records are all from small areas at Pembroke and Albecq. McClintock commented that it was recorded growing abundantly, though usually in small patches, in the north-west and also at Vazon Bay in 1949.

Threats – See Grasslands, particularly the spread of scrub. One location for this plant at Pembroke has been invaded by burnet rose.



Silene conica

SAND CATCHFLY

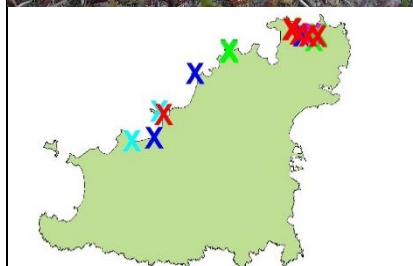


Habitat – Short turf in dune grassland.

Comments – Marquand stated that it was locally common on the sandhills and sandy turf about Vazon Bay, Cobo, Grandes Rocques, and the Vale coast. It is also found on many parts of L'Ancrese Common.

McClintock said: "*Common no longer, but rather scattered in the sandy turf of the north.*" It is now rarer still and becoming difficult to find.

Threats – See Grasslands, particularly the spread of scrub and the lack of grazing.



Asparagus prostratus

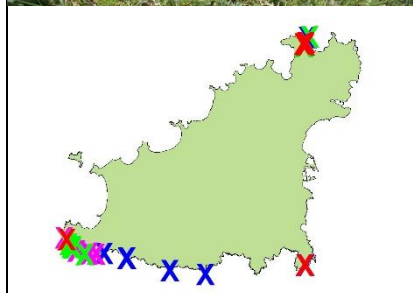
PROSTRATE ASPARAGUS



Habitat – Bareish sea cliffs and sand dunes.

Comments – Marquand considered it very rare and occurred only at Pleinmont. He had had no reports of the wild species in the north of the Island. Its population seems to have increased in the last hundred years possibly due to much reduced gathering of wild food.

Threats – See Grasslands, particularly the spread of scrub and the lack of grazing. The separation of male and female plants across Guernsey makes this species particularly vulnerable. Plants are sometimes defoliated by the asparagus beetle, *Crioceris asparagi*.



STABLE SAND DUNE GRASSLAND

Ophrys apifera

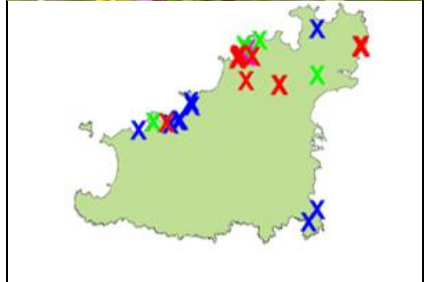
BEE ORCHID



Habitat – Grassland and sand dunes on calcareous or base-rich soils.

Comments – Erratic in appearance so more difficult to monitor populations. Marquand found it generally in very small quantity, often single plants in each spot, in all the southern and central districts, but did not remember to have met with it in the extreme north. McClintock noted that its headquarters were Portinifer, which still holds true. He referred to former sightings on the cliffs.

Threats – See Grasslands.



Bupleurum baldense

SMALL HARE'S-EAR



Habitat – Bareish ground on fixed dune grassland

Comments – Generally on calcareous soils, which limits its distribution locally. Marquand found it in several parts of L'Ancrese, at Portinifer, between Vazon and Albecq. It is still found in these three places.

Threats – See Grasslands; particularly the spread of scrub and the lack of grazing and disturbance of the ground by grazing animals.



Orchis mascula

EARLY-PURPLE ORCHID



Habitat – Neutral or base-rich grassland, scrub and woods.

Comments – Marquand noted it as "*rather rare: generally, in very small quantity, often single plants in each spot. I have noted stations for this species in all the central and southern districts, but I do not remember to have met with it in the extreme north.*"

Now, as then, plants are generally in small numbers or single plants, but the range has shrunk considerably, with most plants found at Jerbourg. The acidic nature of most soils in Guernsey limits this plant's range. It benefits from areas where more lime is present, as in the soils of the south-east.

Threats – Inappropriate or no management of grassland and other habitats.



STABLE SAND DUNE GRASSLAND

Osmia aurulenta

GOLD-FRINGED MASON BEE



**Critically
Endangered**

Habitat – Open fixed sand dune grassland.

Comments – A mason bee specialising in nesting in snail shells including the common garden snail, *Cornu aspersum*, and the brown-lipped snail, *Cepaea (Cepaea) nemoralis*.

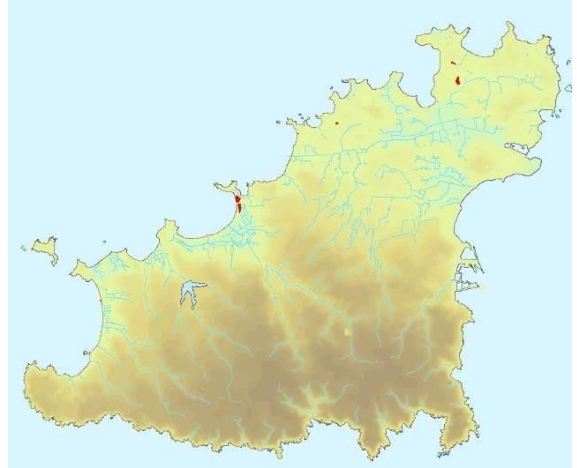
Threats – See Grasslands, particularly the lack of grazing and benefits of disturbance of the ground by grazing animals.



DUNE SLACK



Dune Slack at Albecq



Distribution of Dune Slacks in Guernsey in 2010, indicated in r

HABITAT

Iron pans often form under sand dunes and impede the drainage of water. The resulting water table comes to the surface in hollows in the dunes, thereby creating marshy conditions and sometimes ponds (see page xxx) – so different from the dryness of the surrounding dunes. These are the dune slacks.

Some remain on L'Ancrese and Vazon at the north end of the bay towards Fort Hommet. Others were found at Port Soif and Portinfer, where the slacks increased with the digging out of sand for building. Nearly all have now been filled in, with one remaining isolated slack and pond habitat on the Port Soif Nature Trail.

While the complement of plant and animal species has much in common with marshy grassland, the underlying sandy soil and management by grazing affect the range present.

Typical plants

Typical plants include:

- amphibious bistort
- hairy sedge
- oval sedge
- jointed rush
- sharp-flowered rush
- soft-rush

- cuckooflower
- lesser spearwort
- loose-flowered orchid
- marsh pennywort
- red fescue
- silverweed, which is especially typical of grazed areas.
- spotted-orchids
- sweet vernal-grass
- tufted vetch.

For aquatic plant-life, see the Freshwater Quarries, Reservoirs and Ponds section.

Rarities such as:

- bog pimpernel
- carnation sedge
- marsh-bedstraw
- common sedge
- water-plantain
- lesser centaury
- small-fruited yellow-sedge
- lousewort
- yellow centaury
- velvet bent.

Guernsey centaury hangs on in places, but the lack of grazing means that the scrub and coarse grassland replace the finer grassland they need to survive.

DUNE SLACK

Typical animals

Frogs, newts and a multitude of insects.

MANAGEMENT REQUIREMENTS

See Grasslands, especially grazing when dry enough.

THREATS TO THIS HABITAT

- See Grassland.
- Abstraction of water leading to increased drying-out compared to the normal seasonal cycle.

Exaculum pusillum

GUERNSEY CENTAURY



Endangered
Extinct
Protégée B

Habitat – Short open moist turf in dune slacks.

Comments – This has always been rare, but now is on the verge of extinction. Marquand knew it on the sandy common near Fort Doyle and at another locality towards Fort Le Marchant. It has been found in other places nearby and more recently on the west side of L'Ancrese Common. The latter site was destroyed by unregulated improvements to the horserace track. It is an annual, does not appear every year and varies in abundance when it does show, so it is difficult to be sure of its exact status. Its ecological requirements are uncertain – only habitat maintenance and restoration can hope to provide conditions where it may thrive.

Threats – See Grasslands and Dune Slack.



Cicendia filiformis

YELLOW CENTAURY



Vulnerable
Vulnerable
Vulnerable

Habitat – Damp sandy and peaty bareish ground, often close to the sea.

Comments – Marquand recorded it as "*Abundant all over Fort Doyle headland, and on several parts of L'Ancrese Common... Cobo Castle hill. Plentiful ...in one spot on the cliff-side in Saints Bay Valley.*"

However, its distribution has shrunk since. It is an annual so a similar problem with monitoring minute plants, which are not there every year as the above species.

Threats – See Grasslands and Dune Slack.



COASTAL GRASSLAND

Centaureum pulchellum

LESSER CENTAURY



Vulnerable

Amber

Habitat – Damp grassy or open habitats, especially near the sea.

Comments – Marquand noted it as rare and its distribution as "*Marshy spot on the coast close to Fort Hommet. Wet field adjoining Ivy Castle. Sparingly amongst Glaux on the shore by Grande Rocque Head. By the Vale pond, one plant, and on L'Anresse Common, one plant.... plentifully in a sandy hollow at Albecq.*"

McClintock recorded it from Lihou, near Fort Hommet, Grandes Rocques, L'Anresse, and Pulias. The only recent records are near Vazon. It is an annual so we have the same problems when monitoring its population as with other rare centauries.

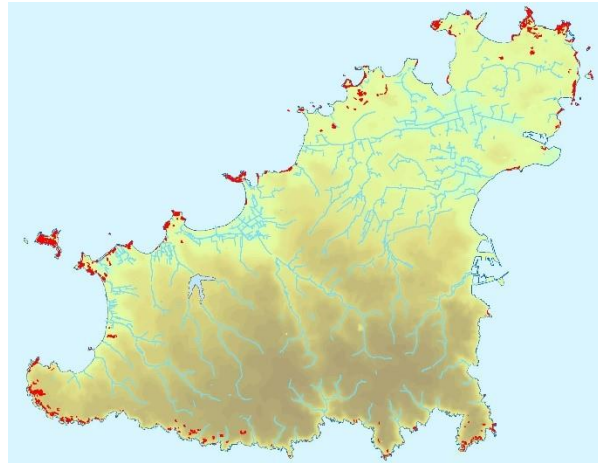
Threats – See Grasslands and Dune Slack.



COASTAL GRASSLAND



Lihou Island looking towards Lihoumel with thrift, *Armeria maritima*, dotted around.



Distribution of Coastal Grassland in Guernsey, indicated in red (•), year

HABITAT

Coastal grassland is still a relatively common grassland type in Guernsey, but it is sometimes difficult to distinguish from dune grassland. Obviously, the soil is different. It is usually gravelly, sometimes with a peaty layer close to the surface. In consequence, a different range of plant species grows on it.

Typical plants

The flora of coastal grassland is amazingly diverse. Typical grasses include:

- common bent
- red fescue.

The wide variety of flowering plants include:

- buck's-horn plantain
- bulbous buttercup
- chamomile
- common bird's-foot-trefoil
- Danish scurvygrass,
- lesser hawkbit
- ox-eye daisy
- shepherd's cress
- slender parsley-piert.

Many of these are common in other dry grasslands, often only where the grassland is sufficiently open and short:

- autumn squill

- buck's-horn plantain
- common bird's-foot-trefoil
- common centaury
- common stork's-bill
- dwarf spurrey
- sand crocus
- sea mouse-ear
- subterranean clover
- suffocated clover
- western clover
- upright chickweed.

Further annuals of barer or low-growing areas, such as:

- bird's-foot
- early and changing forget-me-nots
- silver hair-grass
- smooth cat's-ear.

These annuals may be found elsewhere where conditions allow them to survive.

Perhaps the most exclusive plants are the annuals:

- early hair-grass
- hare's-foot and bird's-foot clovers
- heath pearlwort
- shepherd's cress.

Other typical plants present in both coastal grassland and in pockets of soil on hard cliffs are:

COASTAL GRASSLAND

- English stonecrop
- Huon's fescue
- Portland spurge
- rock sea-spurrey
- sea campion
- thrift.

Typical animals

Coastal grassland is immensely rich in insects. It is impossible to list all of them. Some are associated with particular plants. Each species of plant and every micro-habitat supports its own range. Solitary bees and bumblebees feed on the wide range of flowering plants, both the buff-tailed bumblebee, *Bombus terrestris*, and the large red-tailed bumblebee, *Bombus lapidarius*, being typical.

Slow-worms and small mammals are present.

Many common birds use this habitat for foraging. Meadow pipits are strongly associated with this habitat for breeding and feeding, as are stonechats and linnets where small areas of scrub are available for nesting.

Unfortunately, choughs are extinct here, but they could be reintroduced. The results of the chough reintroduction project in Jersey (see <http://www.birdsontheedge.org/>) have been impressive and a major boon to coastal grassland in addition to the conservation of this iconic species. If Guernsey can bring back significant areas of grazed coastal grassland to the cliffs then there is no reason that they could not be reintroduced here.

MANAGEMENT REQUIREMENTS

- See Grasslands.
- Grazing is the best management, where available.

THREATS TO THIS HABITAT

- See Grasslands
- Particularly lack of grazing leading to scrub
- Spread of Hottentot-fig, *Carpobrotus edulis*, which has been introduced from South Africa.

COASTAL GRASSLAND

Isoetes histrix

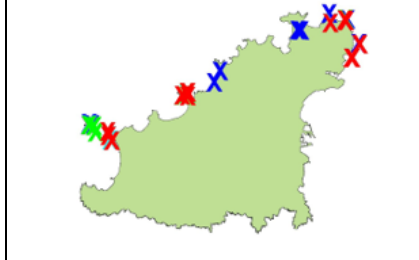
LAND QUILLWORT



Habitat – Found in areas of short coastal grassland, which are damp in winter, and may even be found in slacks that are flooded at that time of year. On peaty soil, sometimes almost bare, but also in closed short turf.

Comments – Needs a certain degree of dampness to survive. It is not known exactly how the spores, produced underground, are spread. Limited to Guernsey, Alderney and the Lizard Peninsula, Cornwall, in the British Isles. Now rare, Marquand's notes indicate that it was formerly more widespread in Guernsey.

Threats – See Grasslands and Coastal Grassland – in particular needs grazing to keep the turf short.



Ophioglossum azoricum

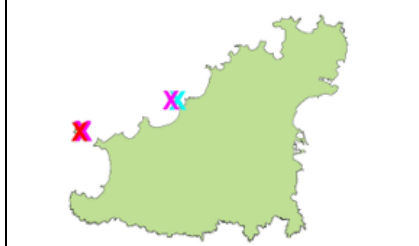
SMALL ADDER'S-TONGUE



Habitat - Found in areas of short coastal grassland.

Comments – Only at Lihou and at one other coastal site in very small populations. It can be distinguished from *Ophioglossum vulgatum* because of its small size, as well as the habitat and from the next species because it fruits in summer instead of winter. Marquand records it growing in small, scattered patches in several parts of L'Ancrese Common.

Threats - See Grasslands and Coastal Grassland – in particular needs grazing to keep the turf short.



Ophioglossum lusitanicum

LEAST ADDER'S-TONGUE



Habitat –Thin soil over rocks.

Comments – In Guernsey it is usually found amongst mosses, on coastal sites, on the South cliffs and at one site on the West coast. Only found in the Scilly Islands in the U.K. and is rare in western France. This species appears in late autumn and dries up by May.

Threats – See Grasslands and Coastal Grassland – in particular needs grazing to keep the turf short and stop the invasion of shrubs such as gorse and Hottentot-fig.



COASTAL GRASSLAND

Viola kitaibeliana

DWARF PANSY

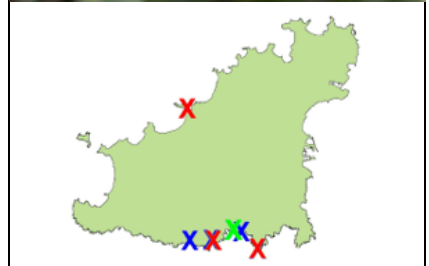


Habitat – Dry open habitats, short-cropped turf, sand dunes.

Comments – Due to its need for short, open turf, it is now found in very few localities, mostly on the cliffs.

Marquand remarked that it was "*rare and local, but abundant where it occurs. Sandhills at L'Ancrese by the Great Cromlech. Also, on the sandhills round Rouse Martello Tower*". This species is only found in the UK in the Scilly Islands.

Threats – See Grasslands, especially lack of grazing; at risk too from invasion by Hottentot-fig.



Chlorissa cloraria

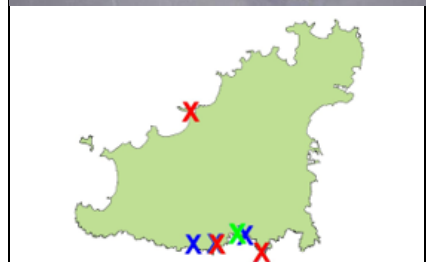
SOUTHERN GRASS EMERALD



Habitat – Coastal grassland with low gorse bushes.

Comments – In France this species is not found closer than Belle-Ile-en-Mer off the south Brittany coast. It was recorded as common along the cliffs by Luff and others in the 19th century, but now appears to be much rarer, probably because much coastal grassland on the cliffs has been invaded by scrub (Sterling and Costen, 2011). The foodplant is unknown.

Threats – See Grasslands, especially lack of grazing, invasion by scrub and Hottentot-fig.



Melitaea cinxia

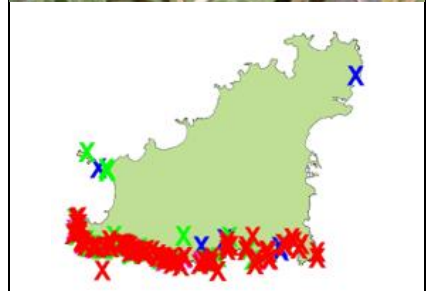
GLANVILLE FRITILLARY



Habitat – Coastal grassland.

Comments – In England this species only occurs along the south coast of the Isle of Wight. It is extinct in Jersey and Sark though common in Alderney. In Guernsey, it is found along the cliffs and varies in number from year to year. The caterpillars eat ribwort plantain. It is one of our most intensively recorded species.

Threats - See Grasslands, especially lack of grazing and invasion by scrub and Hottentot-fig.



COASTAL GRASSLAND

Formica pratensis

BLACK-BACKED MEADOW ANT



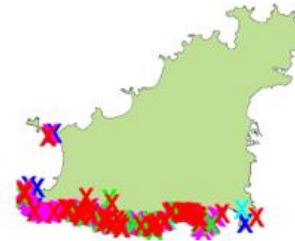
Extinct

Habitat – Coastal grassland, hedgebanks, heath and the edges of scrub on the cliffs and nearby, as well as at Lihou Headland.

Comments – IUCN Red list status: near threatened.

There has been a significant loss of nests in the last 10 years due to trimmer damage. Prior to that, as its habitats shrank, so did its range, but at a slower pace. It was found nearly all along the cliffs even in the 1990s, but is now only common at a few hotspots. The map indicates the intensity of recorder effort showing individual nests and is difficult to interpret in terms of decline, but the shrinkage in range is evident.

Threats - See Grasslands and Heath, especially lack of grazing, invasion by scrub and Hottentot-fig. Damage to nests by strimming or hedge-trimming flails when managing paths and hedgebanks.



Oedipoda caerulea

BLUE-WINGED GRASSHOPPER



Not present

Habitat – On particularly sun-baked areas of coastal grassland on the south-facing cliffs. In Jersey it is also found on sand dunes.

Comments – In the 19th century it was found all along the cliffs from Pleinmont to Petit Port. It has not been found east of Pointe de la Moye recently. When this grasshopper jumps it looks like a blue butterfly, when it lands it seems to disappear as it is cryptically coloured as soon as it folds its wings. The intensity of recorder effort is evident in this map as recorders note every individual or nest encountered.

Threats - See Grasslands, especially lack of grazing, invasion by scrub and Hottentot-fig



Alauda arvensis

SKYLARK



Uncommon

Red

Habitat – Requires undisturbed, unimproved or semi-improved grassland for nesting and a species-rich arable landscape for foraging.

Comments – Now only seen as a non-breeding bird.

Smith: "...it is a common and well-known bird."

Bisson: "Breeds; common resident, migrant and winter visitor." Changes in agriculture, disturbance and degradation of coastal grassland have led to near-extinction. The species could recover if suitable habitat was restored.

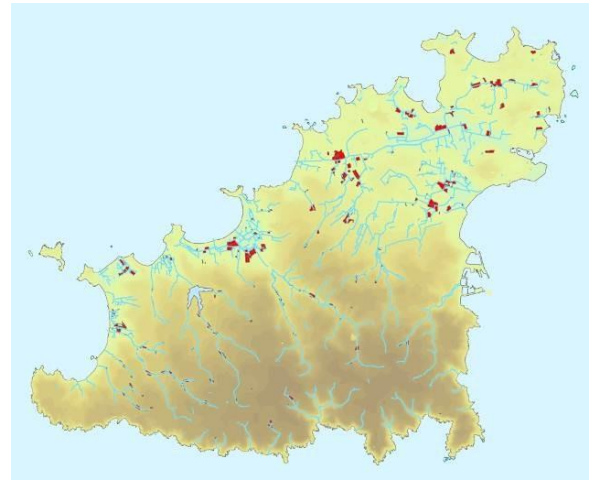
Threats – Loss of species-rich grassland and arable habitat, disturbance of nest sites and feeding birds by dogs.



SEMI-IMPROVED GRASSLAND



Semi-improved grassland by La Rue Rocheuse



Distribution of semi-improved grassland in Guernsey, indicated in red

HABITAT

Semi-improved grassland is a catch-all term to describe a habitat altered by humans.

Semi-improved grassland is a transition category made up of grasslands which have been modified by artificial fertilizers, slurry, intensive grazing, herbicides or drainage, and consequently have a range of species which is less diverse and natural than unimproved grasslands.

Handbook for Phase 1 Habitat Survey JNCC
(1993)

They are generally permanent grasslands and are noticeable in the landscape as being less bright green than improved grassland due to lower fertility and also lack of dominance by perennial rye-grass. Grasses will tend to out-compete other species, except the most vigorous, where the land is more fertile.

Definition of semi-improved grassland

As semi-improved grassland is a transition habitat it makes sense to define what is, or is not, semi-improved. Natural England defines semi-improved grassland as:

Semi-improved grassland is grassland containing less than 30% cover of rye- grasses and white clover and contains between 8 and 15 species per square metre. Cover of wildflowers and sedges is generally over 10% excluding white clover, creeping buttercup and injurious weeds (creeping thistle, spear thistle, broad leaved dock, curled dock and common ragwort).

<http://www.cutandchew.org.uk/indexgrassland/how-do-i-know-if-a-grassland-is-valuable-for-wildlife/semi-improved-grassland/>

Typical grass species in Guernsey include:

- cock's-foot
- common bent
- false oat-grass
- red fescue
- sweet vernal-grass
- Yorkshire fog.

This habitat, along with improved grassland and leys, became prominent during the 20th century. Many fields in Guernsey now come into this category, as they have been 'improved' in the past, but merely maintained since with no further significant improvements. The biggest single area was the grassland around the airport runways. This was lost when the extension of the airport runway was completed in 2014, as the

SEMI-IMPROVED GRASSLAND

area was re-seeded with rye-grass and cut more frequently.

Typical plants

As this is between diverse unimproved grassland and species-poor improved grassland, the range of plants is between these two. The most sensitive and least competitive plants will be missing. Typical plants in Guernsey include:

- common cat's-ear
- common sorrel
- lesser trefoil
- meadow buttercup
- ribwort plantain
- white clover
- creeping buttercup.

The better examples can include spotted-orchids and/or loose-flowered orchids.

Puffballs are one of the few fungi species present.

Typical animals

A variety of grassland-living species are found, as in unimproved dry grassland, except there is a smaller diversity. Species not present are those that depend on plants that are absent or have been destroyed by the management of the land. The poorer the grassland is ecologically, the poorer the diversity of animals that can survive.

MANAGEMENT REQUIREMENTS

- See Grasslands [page XXX](#),
- Most notably, no further applications artificial chemicals or slurry. The diversity will improve as the nutrient levels decline and the herbicides leach out.

THREATS TO THIS HABITAT

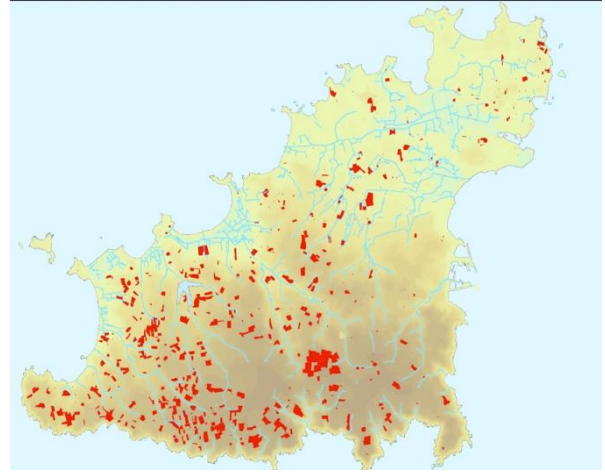
- See Grasslands
- Application of artificial chemicals or slurry applications
- Tree planting.



TRADITIONAL ARABLE



A field in Sark where no weed-killers are used



Arable land in Guernsey in 2010, indicated in red

HABITAT

Arable land is land used for growing crops. The main biodiversity interest in this land is the arable weeds that grow alongside the crops or after harvesting. Many of these have become very rare because of the use of herbicides and artificial fertilisers. A variety of insects visit the flowers. The remains of the crop or the weed seeds provide an important food source for birds and insects through the winter. The main crops grown in Guernsey are potatoes, maize, and brassicas. Only a very small area of traditional cereal crops is grown, though this was very important two hundred years ago. Parsnips were a significant part of the cycle of crops grown.

Typical plants

Typical plants include:

- black nightshade
- chickweed
- corn spurrey
- fat hen
- field woundwort
- fig-leaved orache
- nettle-leaved orache
- groundsel
- many-seeded goosefoot
- redshank

- scented and scentless mayweeds
- scarlet pimpernel
- sharp-leaved fluellen
- shepherd's-purse
- sheep's sorrel
- small nettle
- thorn-apple.

In the past, this habitat would have included other species that are now quite scarce in fields. These include:

- common fumitory
- common poppy
- field pansy
- field forget-me-not
- green and grey speedwells
- hairy buttercup
- long-headed poppy
- weasel's-snout.

Corn marigold was relatively rare by Marquand's time while cornflower and corncockle were down to remnants. All these were more likely commoner when wheat was still grown in significant quantities a hundred years earlier.

The larger cornfield weeds are recently making a comeback in sown fields, where their nectar and seeds are an important source of food for a variety of animals.

TRADITIONAL ARABLE

Typical animals

In species-rich arable fields, foraging solitary and bumblebees, hoverflies and butterflies feed on flowers in the summer. Of the bumblebees, the most commonly seen is the red-tailed bumblebee, but buff-tailed bumblebees and common carder bees also visit. Typical butterflies are common blue and small copper.

In the winter, weevils and bugs feed on seeds. Chaffinch is the most numerous winter visitor feeding on seeds. As might be expected, other feeding finches are linnet, greenfinch and goldfinch. Dunnock is another regular winter visitor, feeding on both seeds and invertebrates. Members of the thrush family are attracted, but not in the same numbers. Skylark and meadow pipit visit weedy fields generally to feed predominately on invertebrates.

Small mammals forage in these fields, certainly throughout the summer and probably through winter too, feeding on seeds and invertebrates. Good numbers of Guernsey voles and greater white-toothed shrews and smaller numbers of wood mice were found in a survey in 2016 in La Société Guernesiaise's sown fields at Pleinmont. Not surprisingly, a barn owl regularly hunts there. It is likely that the resident kestrels benefit too.

MANAGEMENT REQUIREMENTS

- Ploughing in either late winter/early spring or mid-autumn, as this enables most species of weed to flourish
- Avoiding using herbicides, pesticides and artificial fertilisers.

THREATS TO THIS HABITAT

The main threat to the biodiversity of this habitat comes from:

- the extensive use of herbicides and, to a lesser extent, artificial fertilisers
- Any changes in the timing of ploughing.

TRADITIONAL ARABLE

Papaver dubium

LONG-HEADED POPPY



Habitat – Formerly arable fields, now mainly disturbed ground.

Comments – Now often seen as isolated plants - almost completely lost as a plant of arable fields.

Marquand recorded it as "*common in the lowlands at the north and north-west, becoming more rare southwards*". Archaeophyte, annual.

Threats – See Arable.



Fumaria officinalis

COMMON FUMITORY



Habitat – Cultivated land and disturbed ground.

Comments – Known from few sites now.

Marquand recorded it as "*frequent in gardens and cultivated land*".

The commonest of the fumitories in Britain. Archaeophyte, annual.

Threats – See Arable.



Ranunculus sardous

HAIRY BUTTERCUP



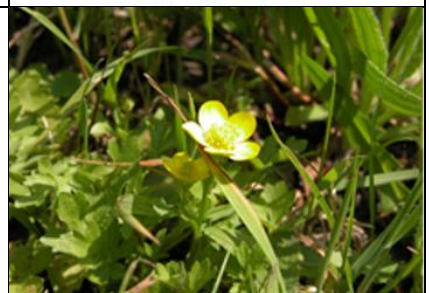
Habitat – Damp grassy and arable places, usually near the coast.

Comments – Known from few sites now, but often common when well suited.

Marquand recorded it as "*frequent in cornfields and cultivated ground... More common in the south of the Island than in the north*".

Annual.

Threats – See Arable and Grasslands.



TRADITIONAL ARABLE

Ranunculus parviflorus

SMALL-FLOWERED BUTTERCUP



Endangered
Rare

Habitat – Bare dry places, often near the coast, also among crops. It is often found on Herm Common.

Comments – It may require more lime than is generally present in Guernsey soils. It appears to have always been rare, but can be abundant when it does appear. Annual.

Threats – See Arable.



Viola arvensis

FIELD PANSY



Endangered

Habitat – Weed of cultivated and waste ground.

Comments – Few recent records. By contrast, Marquand commented that it was "*common in cultivated land throughout the Island*". Annual.

Threats – See Arable.



Myosotis arvensis

FIELD FORGET-ME-NOT



Endangered

Habitat – Open, well-drained ground, including gardens.

Comments – Few recent records. As with field pansy, Marquand's comments contrast strongly, as it was then "*rather common throughout the Island in cultivated and waste ground, and on roadsides*". Annual.

Threats – See Arable.



Photo: Kristian Peters

TRADITIONAL ARABLE

Streptopelia turtur

TURTLE DOVE



**Critically
Endangered**

**Vulnerable
Red/Critically
Endangered**


PLACEHOLDER
PICTURE

Habitat – Farmland and deciduous woodland. Arable weeds are important in its diet so needs species-rich arable fields.

Comments – Now a very scarce breeder.

Smith: “...is a regular, but probably never very numerous summer visitant...”.

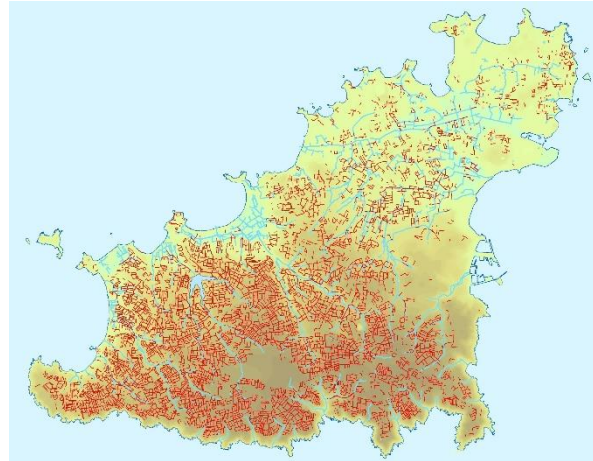
Bisson: “Breeds; fairly common summer visitor and migrant.”

Threats – Loss of species-rich arable fields and other habitats in farmland.

HEDGEBANK



Lane-side hedgebank



Distribution of hedgebanks in Guernsey in 2010. Their extent is indicated in red (•).

HABITAT

Roadside and field boundary banks are a very important feature of Guernsey's landscape. They are generally constructed of earth, often with large pieces of granite at the base.

In sheltered areas, valleys and the north of Guernsey, boundaries were often planted with trees, predominantly elm trees before the devastation caused by Dutch elm disease. Most elms have now gone, but on many banks the roots have produced suckers, which will grow to a certain size before again succumbing, as the infection persists in the root system. Where dead elm roots have rotted away, banks can disintegrate and crumble. Some banks are topped by hedges of native shrubs such as gorse or blackthorn, whilst others have become dominated by bracken and brambles.

Our banks can be regarded as wildlife corridors, linking fields and other open areas and allowing small mammals, slow worms, invertebrates and plants to travel and disperse further afield.

Bare patches of earth on the banks, such as at the bottom where vehicles have scraped off most of the vegetation, also have their uses. These areas become a suitable habitat for small mosses and liverworts and also for insect species such as solitary bees.

TYPICAL HEDGEBANKS



A gorse-topped hedgebank



Grassland bank just before cutting



A newly cut bank

HEDGEBANK

Typical plants

In spring, many banks have traditionally been a delight, with masses of primroses and patches of dog violets. The banks are still most colourful around the end of May, with many flowering plant species including:

- barren strawberry
- cat's-ear
- common sorrel or sheep's sorrel
- ox-eye daisy
- red campion
- sheep's-bit

The law demands that all landowners cut their roadside banks in the first two weeks of June and the last two weeks of September, thus the May flush of flowers is cut every year to the consternation of some. However, the flowers are starting to go over by mid-June and have hopefully shed seed. If there is sufficient rain, they may grow up to flower again later in the year. If this cut was not carried out, much coarser growth such as brambles, ivy and scrub would invade and the wild flowers of spring and early summer would not be apparent. Unfortunately, this is already happening with internal field banks as the cattle no longer graze them.

In a few places in the south of the Island our banks support very rare ferns. It is thought that the amount of shade and shelter generated by the deciduous elms atop the banks created the best conditions for these ferns to thrive. Numbers may have declined due to the loss of these elms, but also the Victorian craze for fern collection did them no good either.

Typical animals

Many species will use these as corridors, but Guernsey voles, field mice, white-toothed shrews all live in grassy banks, using a network of paths through the grass and holes in the bank. Likewise, rabbits will often have burrows in banks, but will be feeding in fields and other grassland nearby. Solitary bees nest in bare ground in banks and ant-lion pits are an increasingly common feature of dry bare

TYPICAL PLANTS



Spring: Primrose, *Primula vulgaris*



Spring: Common dog-violet, *Viola riviniana*



Summer: Sheep's bit, *Jasione montana*



The crescent-cup liverwort, *Lunularia cruciata*, at the **foot of a bank**

HEDGEBANK

areas. Gatekeepers and speckled wood butterflies use the grassland for breeding. Hedges, where present, are used for nesting by

TYPICAL ANIMALS

Some animals use the banks as safe way to travel between habitats. Others rely on the diverse microhabitats within the hedgebanks themselves to set up home.



Ivy bees, *Colletes hederæ*, nesting in the bare ground microhabitat contained within a hedgebank

a variety of birds. Stonechats can often be seen perching on hedges

HEDGEBANK

MANAGEMENT REQUIREMENTS

- Cutting the banks twice a year is legally required on roadside banks.
- Grazing by cows, which are placed in the fields, or cutting at least once a year where the land is arable.

THREATS TO THIS HABITAT

- The cessation of cutting of most roadside banks by hook, this being replaced by mechanical hedge cutting. This usually throws the cuttings back on to the bank, leading to the growth of coarser vegetation.
- Lack of grazing of internal grass banks leads to the growth of scrub and bracken overcoming the more delicate plants –it has been a policy in recent years to fence cows in so that they cannot reach the banks to graze.

- Fertiliser and herbicide drift from the neighbouring fields.
- Ploughing out field banks away from the roads.
- Planting of the banks as gardens with non-native plants, some of which are persistent and potentially invasive.
- Using mypex or other weed suppressant fabrics destroys the habitat for both plants and any associated insects, as well as any that use the bank for nesting. The bank dries out the populations of worms and other soil dwelling invertebrates are likely to decline, but without any surveys this is a hypothesis (Pers. Obs. C. David).

THREATS

Threats include the complete destruction of hedgebanks, but also bad management and maintenance at the wrong times of year.



A bank destroyed by ploughing



An unsympathetic way to manage a bank

HEDGEBANK

Phyllitis scolopendrium x

Asplenium obovatum =

X Asplenophyllitis microdon



Vulnerable

1 record

Not present

1 record

Habitat – Grows mainly on shady banks, often protected by overhanging vegetation. Our Guernsey banks with stone and earth base, and elms on the top, were thought to give the perfect conditions for this fern to thrive.

Comments – Hybrid between lanceolate spleenwort and hart's tongue. It is very rare, and has only been recorded in Guernsey, with one doubtful record from Penzance and one from Jersey.

Threats – Scarping of the hedgebanks by vehicles or over-enthusiastic cutting. It may suffer from the loss of elms.



Asplenium adiantum-nigrum

x obovatum = *A. x sarniense*

GUERNSEY SPLEENWORT



Vulnerable

Not present

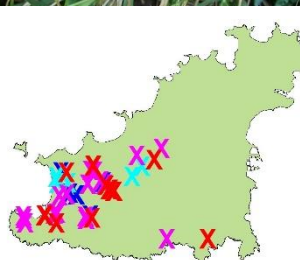
Not present

Not present

Habitat – Mostly in hedgebanks, some in walls.

Comments – This is a hybrid between black and lanceolate spleenworts and is only known in Guernsey where it was first discovered in 1971. The apparent paucity of modern records is probably due to the difficulty of recognising this fern in the field.

Threats – Scarping of the hedgebanks by vehicles or over-enthusiastic cutting.



Hieracium umbellatum

UMBELLATE HAWKWEED



Endangered

Endangered

Endangered

Habitat – sandy heathland, dunes and dry rocky places.

Comments – few recent records. Marquand recorded it as "Local and rare. Occurs in many lanes and heathy places at the Vale and (sparingly) on L'Ancrese Common. Also occurs in good quantity on the rocky shores of Cobo, on Cobo Castle hill, and in the hedgebanks of the neighbourhood." Cobo Castle hill is now known as Le Guet. The pines planted in the 20th century allow little light through. Very few plants can exist under the trees, however, it is still found along the coast road there and on L'Ancrese.

Threats – see Hedgebank, Grasslands and Heath.



HEDGEBANK

Torilis japonica

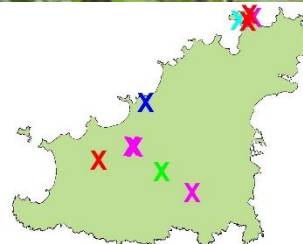
UPRIGHT HEDGE-PARSLEY



Habitat – grassy places, hedgebanks, wood-borders and -clearings.

Comments – Also known as Japanese hedge parsley. Few recent records. Marquand recorded it as “*Generally distributed throughout the Island, and rather common on hedgebanks and in waste places: seldom occurs in any quantity*”.

Threats – see Hedgbank, Grasslands and Heath.



Knautia arvensis

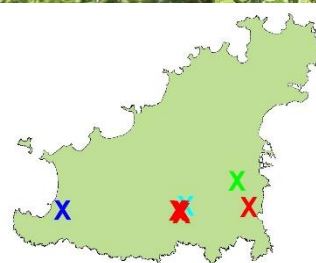
FIELD SCABIOUS



Habitat – Dry, grassy places on light soils.

Comments – All recent records are from a small area of grassy hedgebanks in St Andrew's. This excludes records near Fermain and the Ruettes Brayes, which are from seed mixes. (Pers. Obs. Gilmour, David and Ozanne) Marquand recorded it as “*Rare. I have seen this plant in about half a dozen localities within a radius of a mile and a half from Le Chêne, Forest, but beyond that I have only met with it in a lane near St George, where it grew sparingly. Var integrifolia...in a lane to the south of the old Caudré Mill, at St Peters.*”

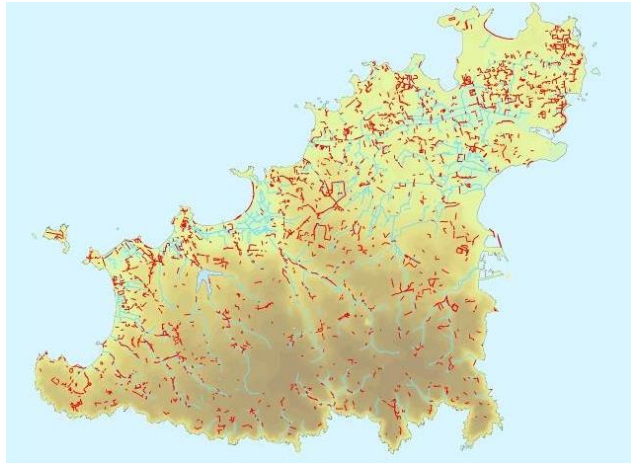
Threats – see Hedgbank and Grasslands.



WALL



A typical vegetated wall



Distribution of field walls in Guernsey in 2010 but outside the urban environments of St Peter Port and St Sampson's. Walls are indicated in red

HABITAT

Guernsey has a good number of vegetated 'granite' walls all over the Island, many of these being composed of gneiss in the south or granodiorite in the north. Herm also has some, and in both islands, these are concentrated in populated areas.

Walls are a historical feature of the Islands with many dating back centuries. Further walls appeared during the heyday of the quarrying industry in the latter part of the 19th and early 20th centuries, when stone was easy to acquire and the skilled labour required to build them was relatively cheap. During this same period, the glasshouse growing industry also took off with the advent of cheap and quick sea transport to markets in Britain. Glasshouses were built with granite walls until the latter half of the 20th century and many obsolete ones still form roadside and field boundaries today.

Old walls will naturally have a greater range of species, unless they have been cleaned. Lime pointing, as has been carried out for centuries, enables calcium lovers such as maidenhair spleenwort, wall rue and rustyback fern to colonise. A whole range of flowering plants will seed into cracks in walls where lime mortar is used. In the last 40 or so years, cement has generally replaced lime and many old walls have been re-pointed. This has eliminated some of the ferns and flowering plants, though some

managed to survive and re-grow from their roots, appearing along the edge of the cement.

Lime is slowly making a comeback, especially for house walls as it enables them to breathe.

Granite walls provide an extension to natural rock habitats, whilst the lime-mortar provides a lime-rich hard surface that is not found naturally in the Island.

Typical plants

Ferns like the calcium-loving ferns referred to above, along with the other local spleenworts:

- black spleenwort
- lanceolate spleenwort
- hart's-tongue fern
- polypody fern

Rarer ferns include:

- maidenhair spleenwort
- rustyback fern
- wall rue

Flowering plants such as:

- pennywort
- Western ivy – which is not usually a welcome inhabitant!

TYPICAL PLANTS



Local fern: Hart's-tongue fern in the Forest.



Rarer fern: Wall-rue on a wall in the Vale.



Flowering plant: Pennywort, black spleenwort and maidenhair spleenwort.



Moss: *Bryum capillare*, showing its typical fruits in winter.

Along with a variety of garden escapes such as:

- ivy-leaved toadflax
- Mexican fleabane, known locally as St Peter Port daisy
- red valerian
- throatwort

The trailing bellflowers:

- Serbian or trailing bellflower, *Campanula poscharskyana*
- *Campanula portenschlagiana*

Various mosses are also typically found on walls.

- *Tortula muralis*
- *Bryum capillare*
- *Homalothecium sericeum*
- *Grimmia pulvinata*

Typical animals

A range of invertebrates use walls for living, nesting, feeding or protection from the elements. Thus, various spiders hide in holes with a web outside, and some solitary bees, such as the leaf-cutter bee *Megachile centuncularis*, nest in them. The moth, *Luffia lapidella*, feeds on lichens and algae.

Various snails, such as the garden snail, *Cornu aspersa*, retreat from the damaging effects of sun and cold in nooks and crannies and feed on the lime mortar to help build their shells, as well as grazing on algae that colonise damper areas.

Some ant species nest in them, including the non-British *Lasius emarginatus* and *Leptothorax unifasciatus*. The minute bristly millipede, *Polyxenus lagurus*, is often seen on walls.

WALL

LICHENS

Walls host a great range of lichens. The species vary depending on the amount of lime used in the pointing.



These include *Diploicia canescens*, the *white paint* on walls all over Guernsey.



Diploicia canescens, forms characteristic white or greenish patches on most walls in the Island. When looked at with a lens, the edges of the lichen look like drying, wrinkled paint.



Diploicia close-up showing the wrinkled edge to the lichen.

GARDEN ESCAPEES

Walls host a great range of lichens. The species vary depending on the amount of lime used in the pointing.



Ivy-leaved toadflax, *Cymbalaria muralis*, a beautiful little introduced weed of walls.



St Peter Port daisy, *Erigeron karvinskianus*.



Throatwort, *Trachelium caeruleum*, another introduced wall plant, seen here in St Julian's Avenue.

WALL

MANAGEMENT REQUIREMENTS

- Use of lime-mortar for pointing walls.
- Wherever possible avoid stripping plants - cutting them back instead - other than those with damaging roots, such as ivy, brambles, tree seedlings and red valerian.
- No spraying of weed-killer – spot treatment only of plants with large roots (see above).

THREATS TO THIS HABITAT

- Cement pointing.
- Intensive weeding or weed-killing.
- Ivy, brambles, tree seedlings and red valerian threaten the integrity of a wall, which can lead to it being demolished and removed.

MICROHABITATS: DUNG



Minotaur beetle, *Typhoeus typhoeus*, which feeds on rabbit dung and is an adult through the winter.



Cattle on L'Anresse Common

HABITAT

Dung is a vital part of the ecology of most land habitats, where these habitats were originally grazed: thus, grasslands of all types would have had dung deposited on them by grazers. The ecology is much more diverse where there is permanent grassland – for soil-breeding species and fungal hyphae to survive.

Recent declines in the fortunes of plants and animals associated with dung have occurred through a great reduction in grazing, especially of permanent grassland, with most animals feeding in short-term leys and few left outside in winter. The practice of *zero-grazing* is, as yet, rare in Guernsey. The use of Avermectin is highly damaging: this is used as an anti-worm medicine, but it kills or damages the insects that breed in dung, the damage including impaired reproduction, inhibited metamorphosis, and physical abnormalities (Strong, 1992). In turn, this slows the rate of recycling of the dung as well as reducing natural food available to various insect-eating animals.

Typical plants

Various fungi, including mushrooms, such as horse mushroom and field mushroom.

FUNGI

Fungi recycle the dung so that other plants can make use of its nutrients.



Horse mushroom, *Agaricus campestris*, is often found in pasture with horses



Giant puffballs, *Calvatia gigantea*, in a pasture

MICROHABITATS: DUNG

Typical animals

A range of specialist flies and beetles breed in dung and these in their turn may be preyed upon by predator larvae of other insects. Their ecology varies. The yellow dung fly, *Scathophaga stercoraria*, lays eggs in the cow pat, but feeds on flowers as an adult. Some dung beetles feed on dung as adults and larvae 'on site' - these are the most numerous group. The earth-boring dung beetles (Dor beetles, minotaur beetles and horned dung beetles) take dung down into burrows to provide food for their larvae and are particularly vulnerable to changes in land management. They are the classic dung ball-rollers related scarab beetles, but because they are generally active at night are rarely seen. One group is in the water beetle family, Hydrophilidae. *Sphaeridium* species swim in fresh dung - quite an amazing adaptation. Three species of this genus are found in Guernsey.

Dung beetles and flies are a valuable source of food for birds, such as starlings, and mammals, such as greater horseshoe bats. The fungi are eaten by insect larvae, especially fungal gnats, which in turn provide food for insect-feeders such as swallows, swifts, house martins and pipistrelle bats.

TYPICAL ANIMALS

Dung beetles and flies are a valuable source of food for birds.



The dung beetle, *Geotrupes spiniger*. Note the mites that give this genus the nickname *Lousy Watchman*.



The dung beetle, *Geotrupes spiniger*, as it is more normally seen



The fly, *Mesembrina meridiana*, breeds in dung. The female lays a single large egg 4.5mm long on a cow pat, which hatches almost immediately, but then she takes some time to mature the next egg so her productivity is slow compared to many insects.

MICROHABITATS: DUNG

MANAGEMENT REQUIREMENTS

- Grazing, preferably all year where appropriate, with animals rotated between sites to maximise the availability of dung and avoid over-concentration.
- Permanent grassland is vital to the survival of some species of dung beetles and mushrooms.
- Avoiding routine drug use in domesticated grazing animals, and substituting other drugs for Avermectin.

THREATS TO THIS HABITAT

- The great reduction in grazing, which has taken place during the latter part of the 20th century and to date, has led to a huge decline in associated insect and fungal populations.
- Permanent grassland has reduced massively in Guernsey due to management of much grazing land for leys. Once grassland is ploughed, particularly when this is repeated regularly as in the management of leys, much, if not all, of the fungal hyphae are destroyed and it is likely that most beetles that are present in the soil will be killed too.
- The routine use of Avermectin especially.

TRACE EVIDENCE

The presence of animals can be detected by their activity. Here a newly excavated hole with resulting pile of soil with shows a minotaur beetle has been at work in the autumn. Rabbit droppings are not far away.



MICROHABITATS: DUNG

Copris lunaris

HORNED DUNG BEETLE



Critically Endangered

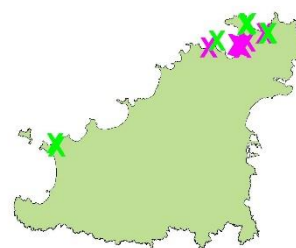
Critically endangered, possibly

Habitat – Dung on sandy well-drained soil.

Comments – This species has an interesting life-cycle in that the female cares for her young in special balls of dung in a nest dug underneath a cow-pat. The whole process takes about 6 months during which time the nest must not be flooded, hence the requirement for sandy soil. This is one of the few insects that live with their full-grown offspring.

Threats – Lack of grazing on the coastal commons, use of Ivermectin.

Photo: Jeff De Longe



Asilus crabroniformis

HORNET ROBBERFLY



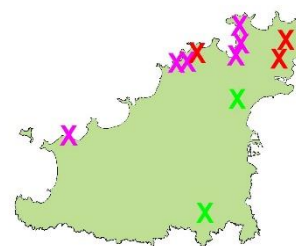
Endangered

Habitat – Dung and insect rich habitats.

Comments – Its larvae are predatory in dung. Lack of data means it is difficult to be sure what the current status is in Guernsey.

Threats – Lack of grazing and permanent species rich grassland, use of Ivermectin.

Photo: Jeff De Longe



Rhinolophus ferrumequinum

GREATER HORSESHOE BAT



Endangered

Habitat – Caves, tunnels, barns and basements, for roosting. Permanent species-rich grassland, hedgerows and woodland for foraging.

Comments – Recent records show that it is in the Island in the autumn, but it is early days in our surveying programme. Sinel (1908): “not uncommon in Guernsey. Many found in cellar of house in St Peter Port some years ago.”

Jee (1972): “Rare and possibly extinct.”

Threats – Loss of permanent species-rich grassland and grazing; the use of Ivermectin. Loss of roost sites due to conversion of barns and other buildings. Timber treatments in buildings.


PLACEHOLDER
PICTURE

MICROHABITATS: BARE GROUND



Ant-lion pits in dry soil



A mole cricket

HABITAT

Bare ground is found in most habitats and is an important micro-habitat.

Typical plants

For plants, it provides the opportunity for seedlings to establish. This is especially important for annuals and biennials such as:

In wet grasslands:

- cuckooflower

In dry grasslands:

- autumn squill
- dwarf millet
- dwarf pansy
- sand catchfly
- sand crocus
- sea mouse-ear
- small hare's-ear
- upright chickweed
- and many other spring flowers

In damp ground:

- Guernsey centaury
- lesser centaury
- yellow centaury

In damp brackish places:

- wild celery

Areas, which are bare and damp in winter, support the likes of dwarf rush and land quillwort.

Typical animals

Many invertebrates, but has significance to birds and reptiles too. A wide range of invertebrates need bare ground for nesting, and for warming up.

Birds, such as house sparrows, will dust bathe and swallows and house martins need mud for nest-building. Reptiles, being cold-blooded, use bare ground for warming as it is hotter in sunshine than vegetated surfaces.

MANAGEMENT REQUIREMENTS

- Grazing helps keep habitats open.
- Regular trampling and some poaching are both important for creating and maintaining bare areas.
- Allowing some erosion features, such as bare sand and soft cliffs.
- Sour fig control.

THREATS TO THIS HABITAT

- Covering the surfaces and sides of paths, especially with tarmac or bonded materials.
- Rock-armouring covering bare sand and soft cliffs.
- Lack of trampling and grazing.

TRADITIONAL ARABLE

- Invasive non-native species, especially sour fig.

ANIMALS USING BARE GROUND

Boundaries between different habitats are also important. The zone between rocks and sand where seaweed and stones are present is an important feeding site for birds.



The wasp, *Odynerus reniformis*, builds a mud tube over its nest.



A bee wolf, *Philanthus triangulum*, nests in bare soil.

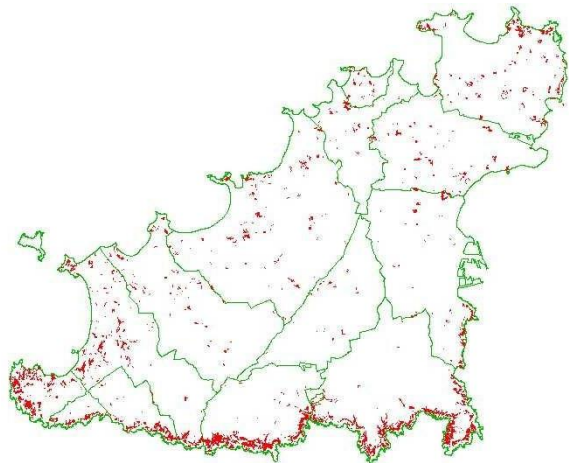


Tiger beetle larvae dig burrows in bare areas.

SCRUB



Scrub at Saints Bay



Distribution of scrub in Guernsey in 2010, indicated in red

HABITAT

Scrub growing in dry places in Guernsey usually has blackthorn, gorse, and/or bramble as the characteristic species, with a sprinkling of hawthorn, elder, apples (often seedlings from domestic apples, possibly germinating from discarded cores) and perhaps some scrubby oak trees (pedunculate, turkey or holm) here and there. In wet areas sallow is the dominant plant.

In Guernsey, gorse was traditionally cut for fuel and many people had rights over such areas. Scrub has increased dramatically as a habitat in the last century with the reduction or cessation of grazing and abandonment of marginal farmland. Large areas of the cliffs, parts of the commons and fields, especially on steep slopes, are now dominated by scrub. As a habitat it has replaced much more bio-diverse grassland.

Typical plants

Ivy, which grows through to flower above the canopy. Honeysuckle, wild roses, including cultivated roses that have gone wild, and bindweed can also be found especially where the scrub is composed of blackberry.

The branches of both blackthorn and common sallow can be rich in the number and diversity of lichens. Sometimes it can be difficult to see the surface of the branch, however, this is patchy,

with some strands of blackthorn being thickly covered and others relatively sparsely populated.

Typical animals

Speckled bush crickets and great green bush cricket adults are frequently found on scrub bushes. The former lays its eggs in tree bark or plant stems. The latter spends time as a nymph in grassland, typically migrating to bushes as an adult. Species dependent on a limited range of scrub include gorse shield-bug and giant willow-aphid.

LICHENS COLONISING SCRUB

There are many common lichen species in scrub.



Evernia prunastri and *Ramalina* spp. are common lichens found on blackthorn

SCRUB

Birds breed and roost in scrub, including many common species such as robin, wren and blackbird. Smaller areas of scrub in grassland have significance for species such as whitethroat, linnet, stonechat, willow warbler (sallow), and blackcap. Various aged stands of gorse are particularly valuable for Dartford warblers. Elderberries, haws and blackberries are important food in the autumn. A variety of birds can be heard singing from areas of scrub on passage in spring, especially warblers.

MANAGEMENT REQUIREMENTS

While there is a need to bring back more grassland, some scrub is important, so some stands of scrub should be kept and management introduced, such as rotational coppicing and cutting for fuel.

THREATS TO THIS HABITAT

When scrub is unmanaged and in the absence of grazing animals, it will ultimately be replaced by woodland. It can also harbour invasive non-

TYPICAL ANIMALS



Gorse shield bug, *Piezodorus lituratus*, on gorse



Giant willow aphid, *Tuberolachnus salignus*, on common willow

HABITAT MANAGEMENT



Bracken and scrub invading coastal grassland on the Island of Houmet Paradis. The owners of the island have had some of this cut back to return the habitat to a more open condition.

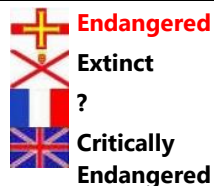
natives such as pampas grass and Japanese knotweed.



SCRUB

Teloschistes chrysophthalmus

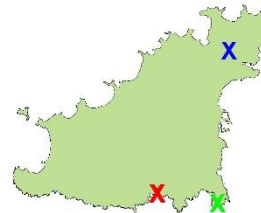
GOLD-EYE LICHEN OR GOLDEN-EYE



Habitat – Typical in areas with a dry climate with frequent spells of fog. It is found on twigs of shrubs and isolated trees, such as apple, hawthorn and blackthorn, in open habitats.

Comments – Has always been rare. Was recorded in the 1840s in an orchard, since then only since 2007 at two sites on cliffs.

Threats – Air pollution and individuals growing on branches that are cut down.



Sylvia undata

DARTFORD WARBLER



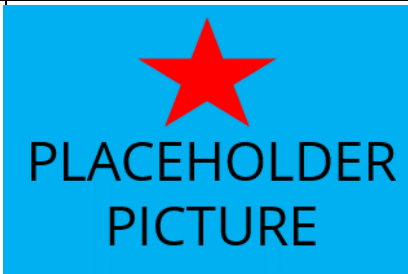
Habitat – Heath and scrub with young gorse.

Comments – Few records of breeding birds recently.

Smith: "...by no means common in the Channel Islands".

Bisson: "Breeds;...very rare due to hard winters".

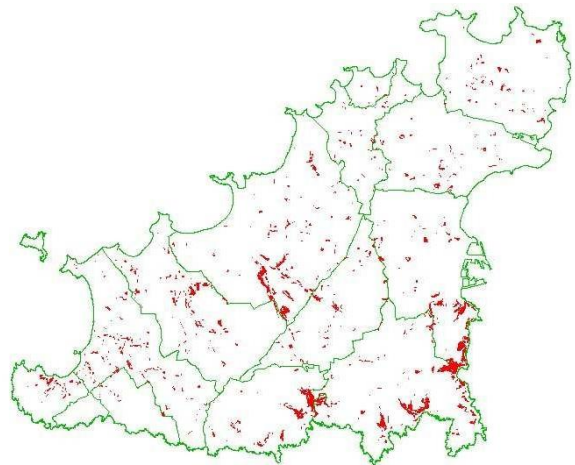
Threats – Cessation of cutting gorse (this was used for fuel in furze ovens) or wild fires that rejuvenate gorse.



BROADLEAVED WOODLAND



Bluebells in a wood at Petit Bôt



Distribution of broadleaved woodland in Guernsey in 2010, indicated in red

HABITAT

Broad-leaved Woodland is typified in Guernsey by areas either where land management ceased in the 19th or 20th centuries or where trees have been planted largely under the free or cheap tree schemes. This means the range of trees varies from the pedunculate, or English oak, ash and the non-native sycamore as typical trees in the self-sown areas to a wide range in planted areas. The latter are young plantations and often there is no established dominant species.

The mature woodland areas are somewhat depauperate in terms of species, partly due to being relatively young habitats, partly because there is no ancient woodland in Guernsey from where other woodland species can colonise, and partly due to the lack of coppicing.

One of the most notable features is bluebells carpeting many of these woods in spring. The ground cover of other woods tends to be ivy.

Dead wood is a valuable part of the habitat for invertebrates for food for examples, larvae of saprophytic beetles, woodlice. It also provides shelter for frogs and many invertebrates.

Typical plants

Bluebell is the main flowering plant found under the full canopy of the trees apart from ivy, although the latter will only flower once it has reached up through the canopy.

Where there is more light, common dog-violets, primroses, red campion and wood spurge, will be found amongst others. These typify the woodland edge such as is found by paths and roads or around the perimeter. If coppicing were practised, these plants would become much more common.

Butcher's broom can also cope with the shade, and occurs here and there in local woodlands and holly is increasingly a feature of the understorey.

Various mosses and liverworts occur both on the ground and the trees, and lichens mainly on the trees.

A typical and distinctive species of the sides of banks is swan's-neck thyme-moss, *Mnium hornum*, dark, dull green with large leaves that are almost fern-like in shape.

Fungi are becoming commoner, especially where dead wood is present, but the range of species is still poor, which is an indicator of the relative youth of this habitat in Guernsey.

Ferns are common as they do not have the same need for light as flowering plants.

BROADLEAVED WOODLAND

TYPICAL PLANTS



Bluebells, *Hyacinthoides non-scripta*



The moss, *Mnium hornum*, at Petit Bôt



Butcher's broom, *Ruscus aculeatus*



Chiloscyphus polyanthus, a common liverwort in damp areas of woodlands.

BROADLEAVED WOODLAND

FERNS

Various ferns are common as they do not have the same need for light as flowering plants.



Male-fern, *Dryopteris filix-mas*, is fairly common especially where conditions are dry.



Broad buckler-fern, *Dryopteris dilatata*, is found all over Guernsey, but is strongly associated with deciduous woodland.



Hart's-tongue fern, *Asplenium scolopendrium*



Golden-scaled or scaly male fern, *Dryopteris affinis*. Very localized and especially notable in Petit Bôt valley.



Soft shield fern, *Polystichum setiferum*, is found mainly in the south.



Polypody, *Polypodium interjectum*, is often found growing on trees.

BROADLEAVED WOODLAND

Typical animals

A great range of birds nest in trees and use woodlands as roosts. The most spectacular tree roosts are where grey herons and little egrets congregate. Also, a variety of birds, both those that are resident either part or all of the year and those that come through on migration, feed in the trees. These include:

- long-tailed tits
- blue tits
- great tits
- goldcrests
- firecrests
- three-toed treecreepers eat invertebrates
- various thrushes
- woodpigeons
- blackcap feed on berries
- siskins and bullfinches feed on seeds
- buzzards (nesting)
- woodcock winters in our wetter woods

Pipistrelle bats hunt for insects under trees and are often seen at the edge of woodland. The relatively limited flora in most Guernsey woods means that the insect fauna is often poor. Typical species include many groups of flies, such as crane-flies. *Stenamma westwoodi*, an ant that is very rare in the UK and not recorded from Manche, is an underground species found in more open woods, while *Stenamma debile*, a commoner species, is found in deep shade. The ant *Myrmecina graminicola* can stand these conditions also.

The galls found on trees (Gilmour and David, 1994) are an important part of the ecology of woodlands. Most gall-causers are insects or mites and these in turn provide food for other invertebrates and for small mammals and birds.

Various insects breed and live on trees, including parent bug, *Elasmucha grisea*, on birch and alder, and goat moth, *Cossus cossus*, on willow. Many insect species benefit from more open conditions, rather than woodland with deep shade.

In the autumn, fungi growing in the woods have a large associated insect population, especially fungus gnats.

A variety of invertebrates rely on dead wood, including woodlice, beetles (for breeding), solitary bees (nesting holes). Standing dead wood is especially valuable for beetles (and birds).

Tree holes are important as nesting and roosting sites and the loss of elms has led to much reduced availability of these for birds and bats. Some species of hoverfly larvae live in the water in tree holes.

Two introduced ground-dwelling species are common: the New Zealand ribbon worm *Argonemertes dendyi*, and the land-hopper, *Arcitalitrus dorrieni*. Neither species is confined to woods.

On the woodland-edge, more species are seen, including speckled bush-cricket. This is noted for laying its eggs in cracks in bark as well as plant stems.

On the woodland-edge, more species are seen, including speckled bush-cricket. This is noted for laying its eggs in cracks in bark as well as plant stems.

MANAGEMENT REQUIREMENTS

As woodland has not been a part of Guernsey's landscape for a long time, there is no history of coppicing. However, the introduction of coppicing or coppice with standard cycles in places would benefit woodland in Guernsey; bringing into the woodland flowering plants, such as primroses and a greater variety of insects.

- Removal of evergreens and non-native seedlings and trees where appropriate and practicable.
- Encouragement of dead wood, both standing and fallen, including killing and leaving unwanted trees to increase this.

THREATS TO THIS HABITAT:

- The lack of coppicing leads to a less diverse habitat.

BROADLEAVED WOODLAND

- Non-natives out-competing natives and evergreens seeding leading to decreased light levels.
- Over-tidiness: removal of all dead material from a wood; excessive removal of under-shrubs.

BROADLEAVED WOODLAND

Osmunda regalis

ROYAL FERN



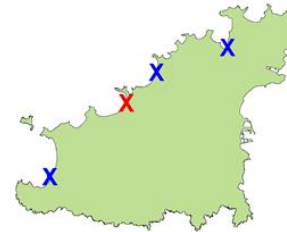
Habitat – Mires and wet woods.

Comments – Marquand recorded it as "*fairly rare: probably extinct*" due to digging up for sale and that it was said that it was at one time fairly plentiful in Guernsey.

Gosselin noted it as "*in a meadow at the Vauquiédor, in the Baissieres; in the Clôture; in the Grande Mare*".

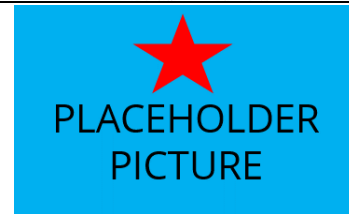
Recent records have been of tiny plants in damp places at the foot of the cliffs. Compton Mackenzie planted it in Herm in the 1920s and the plant is still there.

Threats – See Broadleaved Woodland, Grasslands and Bogs



Pyrrhula pyrrhula

BULLFINCH



Habitat – Deciduous woodland, parks, orchards and larger gardens.

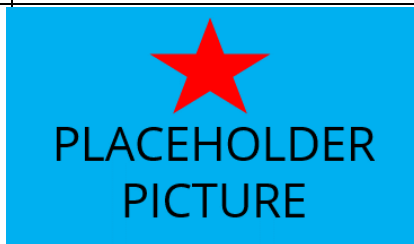
Comments – Significant recent decline in the breeding population.

Smith: "*...not ...common in Guernsey*". It may have been rare in Victorian times due to persecution as a pest of orchards. This would explain why Bisson recorded it as a common resident.

Threats – Lack of insects to feed its young due to a loss of insect-rich habitats.

Muscicapa striata

SPOTTED FLYCATCHER



Habitat – Deciduous woodland, farmland, parks and large gardens with big trees.

Comments – No longer breeding.

Smith: "*regular and numerous summer visitant*".

Bisson: "*Breeds; not common visitor, but fairly common migrant*".

Threats – Loss of insect-rich habitats.

BROADLEAVED WOODLAND

Scolopax rusticola

WOODCOCK



Habitat – Deciduous moist woodland; also forages in grasslands.

Comments – Declining winter visitor.

Smith: *A regular and tolerably common autumnal visitant.* Most were shot if seen.

Bisson: *“Not common winter visitor and migrant.”*

Threats – Shooting, disturbance.


PLACEHOLDER
PICTURE

CONIFEROUS WOODLAND



The Pine Forest above Divette

HABITAT

This habitat has been planted within the last 120 years and dominated by non-natives, either Monterey pine or Corsican pine. The former creates a dark environment as its canopy lets little light through and the ground beneath is mainly carpeted with pine needles. This can be seen at Le Guet south of Cobo and around the Reservoir.

Corsican pine, by contrast has a more open canopy so that the ground flora is like that of an open broad-leaved woodland or woodland-edge. This is the main tree at the Pine Forest above Divette, although there is a small area of Monterey pines on the north-west side of the wood.

Typical plants

Under Corsican pine: bluebells, greater wood-rush and bracken along with other ferns.

Under Monterey pine: generally no plants other than around the fringes or in gaps, where woodland and woodland-edge plants can grow.

Mature conifer woods can be very important for fungi. Many species are found here that do not occur in other habitats. Since coniferous woodland is a rare habitat in Guernsey many of these fungi are very rare here.

Typical animals

Long-eared owl, which nests in the trees. In autumn and spring, goldcrests and firecrests feed in conifers.



Distribution of Coniferous Woodland in Guernsey in 2010, indicated in red

Insects that feed on the species of fungus found in conifer woods.

MANAGEMENT REQUIREMENTS

Possibly planting with either the near native Scots pine or introducing native broadleaved trees to increase diversity and ensure more ground flora can survive.

THREATS TO THIS HABITAT

This habitat is generally not threatened except by the age of the trees. As this habitat has replaced more species-rich ones it is not of conservation importance other than as a nesting site for long-eared owls, and for the diversity of

FUNGI



Amanita gemmata, is a rare species in the UK but common in Guernsey especially in pine woods.

fungi and the insects that feed on the trees and rotting wood. However, these could be

CONIFEROUS WOODLAND

accommodated by conifers within mixed woodland, which would be a more diverse alternative.

FRESHWATER QUARRIES, RESERVOIRS AND PONDS



Pond on Port Soif nature trail



Pond on L'Ancrese Common with two species of water-crowfoot

HABITAT

Small, shallow water bodies are referred to as ponds. These may be permanent or temporarily dry in summer. In Guernsey, natural and artificial ponds occur in dune slacks, gardens, wetlands and parks. Dune slack ponds are particularly likely to be seasonal as the water table drops below the surface in summer. Some dune slack ponds have been dug by man in order to provide drinking water for livestock and these have sometimes been lined with clay, no doubt facilitating their survival through the summer months. Temporary ponds will often support a slightly different range of plants and animals from those found in permanent water.

Larger areas with similar ecological conditions are to be found in shallow-water quarries and shallow zones within deep-water ones; along with shallow areas of the Reservoir.

Human activities have both increased and decreased this habitat at times in the past, with the Grand Mare being a carp pond at one time and ponds on L'Ancrese dug, presumably for stock-watering; more recently the Reservoir flooded in the 1950s and development of relatively cheap artificial liners in the 1960s/1970s, enabling many to have garden ponds. Since the 1970s, many shallow quarries

have been filled in, whilst both shallow water areas in quarries and ponds have become overgrown, shading out the pond plant life. Many dune slack ponds in the Portinfer and Port Soif sand dunes have been filled in along with the habitats around them (see 'dune slacks' on page xxx). In the last 20 years or so the great increase in the numbers of Mallard-type ducks has had a devastating effect on the quality of many bigger ponds. Thus, there has been a real flux in the fortunes of water-plants and animals.

Typical plants

Curled pondweed, amphibious bistort, and various water crowfoots. More rarely, other pondweeds, *Potamogeton* species, and milfoils, *Myriophyllum* species, may be found. The shallower areas and edges may have common spike-rush, water starwort, floating sweet-grass, water mint, lesser spearwort and, more rarely, water plantain or celery-leaved buttercup present.

FRESHWATER QUARRIES, RESERVOIRS AND PONDS

TYPICAL PLANTS



Curled pondweed, *Potamogeton crispus*, in flower.



Celery-leaved buttercup, *Ranunculus sceleratus*, [ES NOTE: corrected spelling] and duckweed, *Lemna minor*, at La Claire Mare.

Typical animals

In the best ponds you can find a tremendous variety of aquatic life:

- brown and green *Hydra*
- copepods
- frogs and newts in the breeding season
- water beetles
- damselfly larvae
- dragonfly larvae
- ostracods
- pond snails
- water bugs such as water-skaters and water-boatmen
- water-fleas

Swallows, house martins and sand martins swoop to feed and drink during the day, whilst pipistrelles and other bats will do so by night.

Tufted ducks, little egrets, grey herons and cormorants roost around quarries. Little grebes, coots and moorhens all nest at the Reservoir and in some quarries. Herring gulls are often seen in good numbers.

TYPICAL ANIMALS



The red damselfly, *Pyrrhosoma nymphula*.



The cladoceran, *Simocephalus vetulus*, one of many species of water-flea found in local ponds.

FRESHWATER QUARRIES, RESERVOIRS AND PONDS

MANAGEMENT REQUIREMENTS

Some management is vital to the continued survival of ponds. This is best carried out in rotation so that the habitat is never entirely removed. Grazing or cutting of the edges (with removal of vegetation) in rotation to keep trees from shading the water too much (see also under brackish lagoons); clearing of most scrub that has invaded/overshadowed the habitat. Some shade is valuable for invertebrates, but most water should be sunny so that the pond is oxygenated by plants.

Removal of non-native water plants and control of Mallard-type duck populations.

THREATS TO THIS HABITAT

- Filling-in continues to be a threat to the remaining ponds and quarries.
- The recent and continuing increase in the population of 'Mallard-type' ducks, especially as their numbers are boosted by being fed, is a major cause of loss of water-life. In the numbers currently seen locally they can devastate the plant and animal life, as they eat a wide range of both, including frogspawn, whilst their droppings increase nutrient levels, such that these habitats can, and do, end up fetid and almost lifeless.
- Lack of management: if left alone vegetational succession dries the habitat out or it becomes overshadowed by trees, such as salallows, so that little diversity of plant life can exist.
- Introduction of non-native invasive plants such as parrot's-feather and New Zealand pigmyweed out-compete and replace native vegetation.
- Nutrient enrichment caused by organic and inorganic fertilisers and atmospheric pollutants damages the ecology, boosting algal growth and killing animal life.
- Other types of pollution can be a problem in quarries where dumping takes place.
- Introduction of fish, such as unwanted goldfish, leads to a loss of invertebrate and frog populations (goldfish eat most

invertebrates in a pond, along with tadpoles).

- Abstraction of water lowers the water table leading to increased drying out of ponds in the vicinity. This is a particular problem for the ponds at L'Ancrese.

FRESHWATER QUARRIES, RESERVOIRS AND PONDS

Ranunculus trichophyllus

THREAD-LEAVED WATER-CROWFOOT

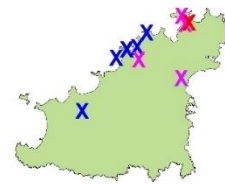


Endangered
Extinct?

Habitat – Ponds and ditches- needs sunny conditions. Can be an annual in temporarily wet habitats.

Comments – Occurs in few sites now. Marquand commented that it was "*Frequent in pools about Grandes Rocques and Cobo. In Gosselin's herbarium there are specimens... from Grandes Mielles and Grandes Mare*". Most of these sites have no or few natural ponds now. The picture shows both this species (small flowers) and pond water-crowfoot, *Ranunculus peltatus*. Annual or perennial.

Threats – See Ponds and Shallow-water Quarries'.



Ranunculus peltatus

POND WATER-CROWFOOT

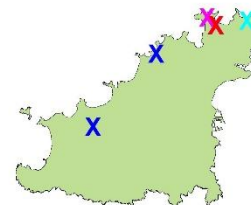


Endangered
Extinct

Habitat – Ponds and ditches - needs sunny conditions.

Comments – Occurs in few sites now and most of the plants seen are possibly hybrids with brackish water-crowfoot, *Ranunculus baudotii*. Marquand commented that it was "*In several of the pools at L'Anresse*". Annual or perennial.

Threats – See Ponds and Shallow-water Quarries.



Myriophyllum alterniflorum

ALTERNATE WATER-MILFOIL



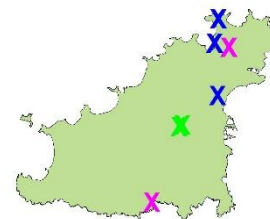
Critically endangered

Habitat – Base-poor lakes, ponds, slow streams and ditches. In Guernsey it has been found in ponds and quarry pools with shallow water – needs sunny conditions.

Comments – Possibly occurs in one or two quarries now. Marquand recorded it as "*Rare. Small pool between Coutanchez and Baubigny, and a pool below a large quarry heap at Baubigny. Quarry pool towards Fort Le Marchant.*" Babington recorded it "*in ditches to the north of Ivy Castle*". Most of these sites do not exist as good quality water habitats now or have been filled in. Perennial.

Threats – See Ponds and Shallow-water Quarries.

Photo: John Crellin



FRESHWATER QUARRIES, RESERVOIRS AND PONDS

Potamogeton polygonifolius

BOG PONDWEED



Extinct

Occasional

Habitat – In shallow water in lakes and pools, usually in acid water; can exist in a sub-terrestrial state in boggy conditions.

Comments – This could be re-introduced as it would improve our limited range of pondweeds as they represent an important part of aquatic flora. Marquand recorded it in deep pools in La Grande Mare and in some of the ditches nearby.

Threats – drainage is the most likely cause of its demise.



Potamogeton natans

BROAD-LEAVED PONDWEED



Endangered

Extinct

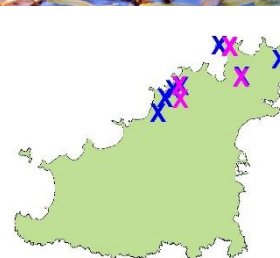
Habitat – Sunny shallow water areas of quarries.

Comments – The relatively few quarries with sunny shallow water areas vary in the water plants which have colonised them. This species was first recorded in Guernsey in 1958 (McClintock, 1975). McClintock adds that "it must have been overlooked before, for it was then in quarries at Mont Cuet, Portinfer and Cobo...it is still to be seen in two or three, most recently at Ville Baudu and La Passée."

It was present in 4 quarries in 1991.

Threats – See Ponds and Shallow-water Quarries.

Photo: Christian Fischer



Menyanthes trifoliata

BOGBEAN



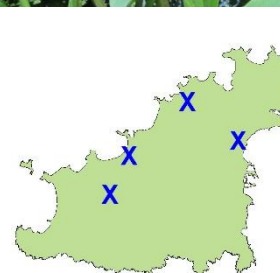
Extinct

Extinct

Habitat – Sunny shallow water.

Comments – Marquand commented "Very rare, and now nearly extinct...at one time plentiful at Grande Mare, but an enthusiastic collector succeeded in exterminating it some thirty years ago". It also grew in ditches behind Chateau des Marais in the 1830s and before (see Babington's Flora and Gosselin's List).

Threats – collecting caused the extinction of this species.



FRESHWATER QUARRIES, RESERVOIRS AND PONDS

Cypris bispinosa

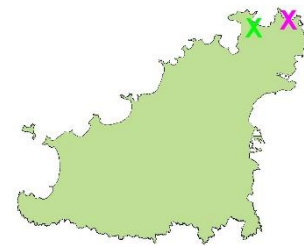
TWO-SPINED SEED SHRIMP



Habitat – Temporary ponds

Comments – Lukis recorded this crustacean from ponds on L'Ancrese Common in the 1850s. In the 1980s it was discovered in temporary ponds in Norfolk, and at that time it was in two ponds on the Common. One of these has since been filled in, so now it is only found in one place in the Channel Islands. It occurs further south in Europe around the Mediterranean. In the picture the head is to the left and one can see one of the two spines clearly.

Threats – See Ponds and Shallow-water Quarries.



Hydrophilus piceus

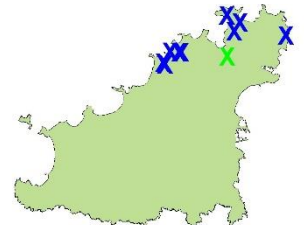
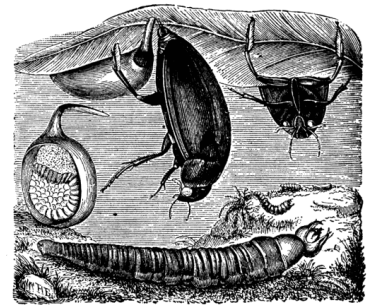
GREAT SILVER WATER BEETLE



Habitat – Still, fresh water, preferring vegetated areas.

Comments – This fascinating beetle is the largest in Guernsey. The female spins a cocoon with her tail in which she lays her eggs. The larvae are carnivorous and the adults herbivorous. This species used to be common in the quarries in the north of the Island, but the Guernsey Biological Records Centre has only one record in the last thirty years.

Threats – See Ponds and Shallow-water Quarries, especially the effects of Mallard-type ducks at current population levels.



Gyrinus sp.

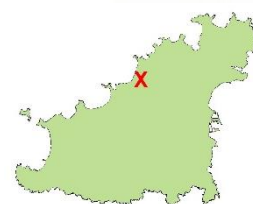
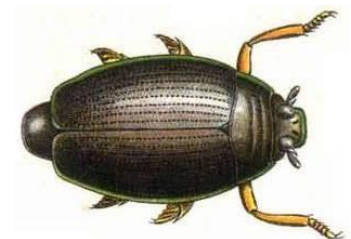
WHIRLIGIG BEETLE



Habitat – Still, fresh water.

Comments – Three species are or have been present in Guernsey. Now very rare. The only ones recorded recently are *Gyrinus caspius* (see upper left map) and one record for *Gyrinus urinator* (see lower right map).

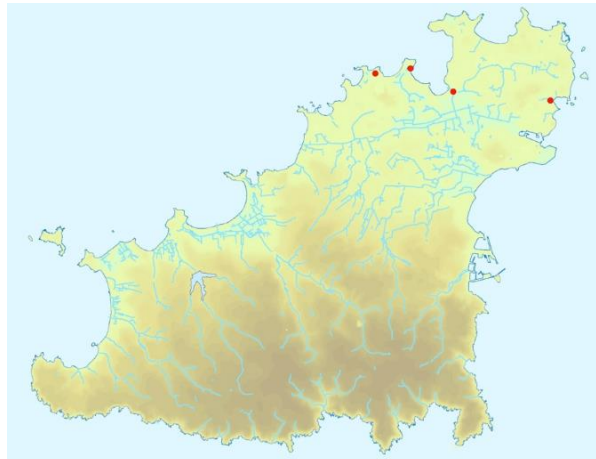
Threats – See Ponds and Shallow-water Quarries, especially the effects of Mallard-type ducks at current population levels.



BRACKISH LAGOONS AND PONDS



Pulias Pool



Brackish lagoons in Guernsey in 2010, indicated in red

HABITAT

There are two main brackish lagoons in Guernsey. Pulias Pool was formed by a shingle bank growing across a small bay. At high tide seawater enters through a pipe under the shingle and the salinity varies according to the state of the tide and the amount of rain and inflow from a small stream. The Vale Pond is the last remaining piece of the Braye du Valle on the land side of the embankment that keeps the sea out at the western end. There is a fresh water inflow from a catchment of a large part of the Island, but this is mostly extracted by States Water. However, the bank to the sea is always

REMNANT OF BRACKISH LAGOON

The Vale Pond is the last remaining piece of the Braye du Valle.



leaking and the salinity seems to vary less than at Pulias.

There is also a pond at Rousse inland of where the stream enters the sea and a small pond behind the coast road at Bordeaux where a stream runs backwards from the sea at high spring tides.

Typical plants

The brackish water supports species of algae, including *Cladophora* and *Enteromorpha*, and many microscopic taxa such as diatoms, which all contribute to the whole ecosystem of the lagoon.

Typical animals

Many snails and other invertebrates, including the common ditch shrimp, *Palaemon varians*, feed on the algae and are themselves eaten by wading birds, ducks and eels.

Young fish may be found at various times of year. These fish provide food for foraging waders, and other birds, particularly in the winter and when they are on migration.

MANAGEMENT REQUIREMENTS

- Grazing or cutting and removal of vegetation at the edge of lagoons annually would help to provide the 'edge' habitat that is often so important for invertebrates, such as Carabid and rove beetles.
- Maintaining water flow from both land and the sea sources ensures that brackish conditions are maintained.
- Clearing any rubbish.

BRACKISH LAGOONS AND PONDS

THREATS TO THIS HABITAT

- Many people find these habitats smelly and ugly. There have been calls in the local paper for Pulias Pool to be filled in.
- The pools form a convenient dumping ground for rubbish.
- Loss of water inflow, weather from land or sea destroys the balance in the salinity. Where inhibited from both inlets, this leads to stagnation. This is particularly noticeable at Vale Pond.



Ranunculus baudotii

BRACKISH WATER CROWFOOT

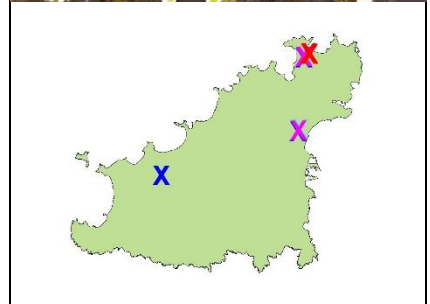


Critically
endangered
Extinct

Habitat – Ditches and ponds near the sea, often brackish. Needs sunny conditions. Usually behaves as an annual in temporary pools.

Comments – Occurs in few sites now and most of the plants seen are possibly hybrids with pond water-crowfoot, *Ranunculus peltatus*. Marquand commented that it was "*In considerable quantity in a marshy field a little to the north of Ivy Castle*". That was when the sea probably still seeped through the shingle bank at the back of Belle Grève Bay and so the ditches were brackish. Annual or perennial.

Threats – See Brackish Lagoons and Ponds and Ponds and Shallow-water Quarries.



SPRINGS AND FLUSHES



Springs on the cliffs showing the lush vegetation including grasses and sedges

HABITAT

Springs are where the water seeps out of the ground and flushes are areas irrigated by the springs. The habitat may well merge into the marshy bottom of the valley.

Within the last two hundred years many springs have been piped. Historically, flushes would have been grazed and have a characteristic flora not dissimilar to the wetter parts of the marshes. However, the flora differs subtly because of the constant presence of flowing water.

Many existing flushes have lost most of their flora due to cessation of grazing and become either small reed beds or sallow scrub. Underneath these taller plants there will sometimes be found remnant populations of wetland flora.

Typical plants

Creeping bent, common yellow-sedge, glaucous sedge, soft-rush, sharp-flowered rush, toad rush, brookweed, bog stitchwort, and bog pimpernel.

Formerly, ivy-leaved crowfoot would have been typically found by springs, but has only been found once in recent decades in this habitat.

Typical animals

A range of invertebrates are known to be associated with these habitats including:

- Dolichopodid flies
- crane flies

- soldier flies
- spiders
- worms.

These patches will form important sources of moisture for insects when the plants in most of the dry areas around have finished flowering.

MANAGEMENT REQUIREMENTS

- Ideally grazing, or cutting and removal of cuttings where grazing cannot take place
- Clearing of any scrub that has invaded.

THREATS TO THIS HABITAT

The remaining areas are at risk from

- drainage for either building or agricultural improvement
- from abandonment of management, mainly grazing, leading to the formation of sallow scrub and ultimately woodland.

SPRINGS AND FLUSHES

TYPICAL PLANTS



Brookweed, *Samolus valerandi*.



Bog stitchwort, *Stellaria uliginosa*.

TYPICAL ANIMALS



Liancalus virens, a large Dolichopodidae fly found wherever water runs across bare rocks, as in flushes on the cliffs

SPRINGS AND FLUSHES

Anagallis tenella

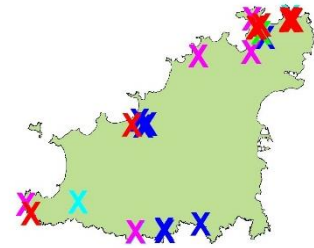
BOG PIMPERNEL



Habitat – Grows in wet areas such as dune slacks and near streams or springs.

Comments – It is only been found recently at wet areas of L'Ancrese Common, one field in La Grande Mare and at a couple of springs on the cliffs at Pleinmont. Marquand recorded it as "*common throughout the island on the banks of rivulets and in wet marshy places*".

Threats – See Springs and Flushes and Dune Slacks; especially drainage; wet areas becoming over grown with shrubs or tree.



Carex viridula subsp. *oedocarpa*

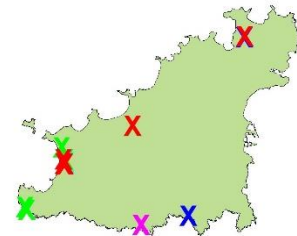
COMMON YELLOW-SEDGE



Habitat – Marshy and boggy grassland, wet heaths, the margins of ponds, streams flushes and seepage areas.

Comments – Now occurring in very few places. Marquand recorded it as "*Plentiful at Grand Mare and neighbouring marshes. Rather common in wet places on the cliffs. Marsh on the eastern side of L'Ancrese*".

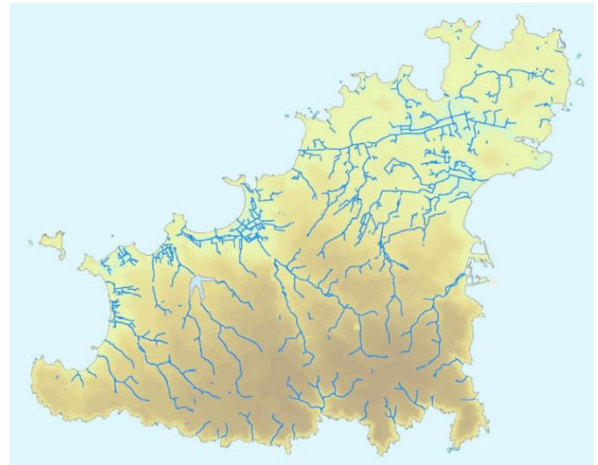
Threats – Habitat loss through improvement and drainage in fields and through invasion by bracken and scrub on the cliffs.



STREAMS AND DOUITS



Douit somewhere in Guernsey



Streams in Guernsey indicated in blue

HABITAT

Streams as a type of flowing water habitat need no introduction: in Guernsey they are small, even if some of the valleys they inhabit are impressive, such as the Petit Bôt valley system, as these valleys were carved out by the more powerful force of spring melt waters during the various Ice Ages.

Man-made streams in Guernsey are called douits; in the south of the Island they were

constructed as mill streams so are not at the bottom of valleys, but in the north, they are drainage ditches in the marshes.

Many inland streams were put into culverts during the 19th century, leaving the cliff streams as the main representatives of this habitat, thus many of the typical plants were recorded in the cliff valleys by Marquand at the end of the 19th century. As the cliffs have largely become dominated by scrub or woodland within the last hundred years, species requiring sunlight have

TYPICAL STREAM AND DOUIT



South: A fast-flowing stream at Petit Bôt



North: A ditch or douit in Les Abreuveurs

STREAMS AND DOUITS

become extinct or extremely scarce. Ditches draining fields have, by contrast, remained relatively open. The majority of drainage channels, whether stream or douit, must by law be cleared twice a year and this influences the range of plants present. Traditionally, stream side sides were grazed and streams still have to be cut to maintain the flow.

Many streams and douits now show the influence of fertiliser run-off, whether it be artificial nitrates and phosphates or slurry. Typical effects include a depauperate flora, which is typically dominated by fool's watercress with rank grass growth on the banks.

The fauna and flora of the fast-flowing streams in the hilly south of Guernsey are often very different from the slow-flowing streams in the flatter north.

Typical plants

A whole range of plants can be found along stream and douit banks. Along shady banks these will include

- Cornish moneywort
- lady fern where there is room
- liverworts like great-scented liverwort
- opposite-leaved golden saxifrage
- a variety of mosses and grasses such as creeping bent.

Sunny 'unimproved' steam banks are now so rare it is more appropriate to refer to the flora they would have had!

These include:

- bog pimpernel
- bog stitchwort
- brooklime
- brookweed
- bugle
- creeping bent
- creeping forget-me-not
- ivy-leaved crowfoot
- marsh bedstraw
- marsh St. John's wort
- marsh woundwort
- purple-loosestrife where room

TYPICAL PLANTS



Water Starwort, *Callitriche* sp.



Watercress, *Nasturtium officinale*



Fool's watercress, *Apium nodiflorum*, is sometimes confused with watercress, but is not pleasant to eat.



Opposite-leaved golden-saxifrage, *Chrysosplenium oppositifolium*, likes damp, shaded habitats, so is found by the streams in the wooded cliff valleys.

STREAMS AND DOUITS

- greater skullcap
- by Le Jaonnet stream, lesser skullcap.

LIVERWORT



Great-scented liverwort, *Conocephalum conicum*

Typical animals

Leeches, flies, fresh-water limpets and other snails, bivalves, caddis flies, freshwater shrimps, flatworms, water bugs such as water-striders, sticklebacks, and eels.

Herring and other gulls drink from streams, particularly where they come out onto the beach or at the bottom of the cliff.

Grey wagtail uses streams when wintering in the Island (see below).

MANAGEMENT REQUIREMENTS

- Cutting the vegetation at the edges of open streams at least twice a year or grazing.
- Clearing scrub and trees from some cliff streams to re-create the stream and adjacent grassland habitats.
- Follow-up maintenance (see above and management requirements of unimproved grassland).

THREATS TO THIS HABITAT

- Herbicide, pesticide or fertiliser run-off from fields.
- Shading over the entire length of a stream or duit.
- Pollution by seepage from leaking oil, chemicals or sewage.

STREAMS AND DOUITS

Veronica beccabunga

BROOKLIME

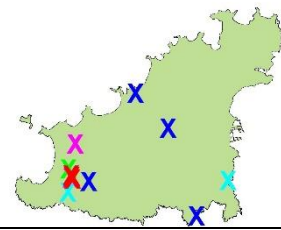


Endangered
Common

Habitat – Typically found growing on the sunny margins of streams and ponds.

Comments – Needs sunlight and open water margins, such as would be created by cattle grazing, trampling or drinking. It dies out when shaded and re-appears when the area is disturbed and the seed bank re-exposed to sunlight. Marquand stated that it was "*common in watery places in the south and in all the cliff valleys*".

Threats – See Ponds and Shallow-water Quarries.



Stachys palustris

MARSH WOUNDWORT

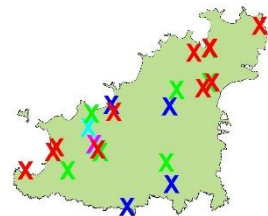


Vulnerable

Habitat – Damp places: the margins of streams, ponds.

Comments – Marquand considered it to be "*frequent throughout the Island generally, but chiefly found towards the interior, or in localities at some distance from the sea.*" Now a small number of sites known, with only a few plants in any one locality

Threats – See Streams and Douits; Bogs.



Hypericum elodes

MARSH ST. JOHN'S-WORT



Extinct
Vulnerable

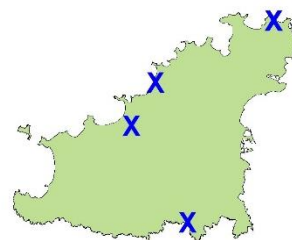
Habitat – Bogs, sides of ponds and streams on acidic soils.

Comments – Marquand recorded it as "*common in nearly all the cliff-streams along the south coast. Plentiful at Grande Mare. Marsh at eastern end of L'Ancrese.*"

Gosselin: "*North side of ditch in Ivy Castle.*"

Last known site was a small bog near Hougue Patris, which was subsequently partially filled in and neglected and it has not been seen since.

Threats – See Bogs, and Springs and Flushes.



STREAMS AND DOUITS

Gasterosteus aculeatus

THREE-SPINED STICKLEBACK



Habitat – Streams, ponds and in the sea.

Comments – Stickleback can live both in the sea and in fresh-water. In Guernsey very few streams have a population.

Threats – Drought, lack of communication of a stream with the sea due to artificial structures at the mouths, pollution.

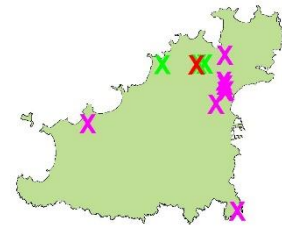


Photo of male stickleback: Piet Spaans

Anguilla anguilla

EUROPEAN EEL



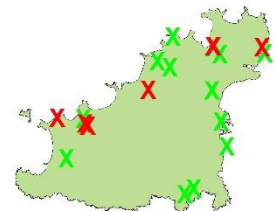
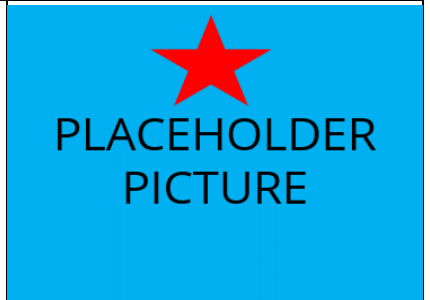
Habitat – Freshwater and brackish streams, ponds, quarries and the Reservoir.

Comments – IUCN Red list status: critically endangered.

The IUCN states, with reference to Europe, that: "Since the early 1980s, a steady and almost continent wide decline of ~90% has been observed in the recruitment of glass eels."

See <https://www.iucnredlist.org/species/60344/45833138>

Threats – Pollution incidents in streams, ponds, and the sea; barriers between water bodies and the sea (sea walls, Guernsey Water's water-capture sluices); habitat loss. Globally fishing is also an issue.



Motacilla cinerea

GREY WAGTAIL

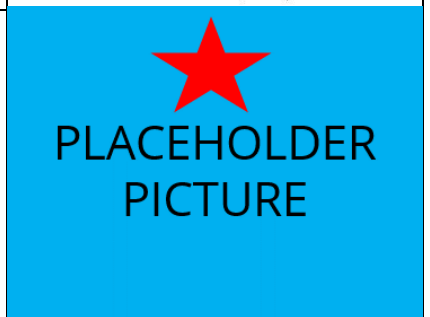


Habitat – Stream-sides in the valleys, reservoir streams etc. – flowing water is critical.

Comments – This is now a scarce winter visitor and occasional breeder. Smith: "is by no means common in the islands, though it may remain to breed...It is, however, no doubt an occasional, though never very numerous, winter visitant".

Bisson: "Fairly common winter visitor and migrant. Pair bred in 1977."

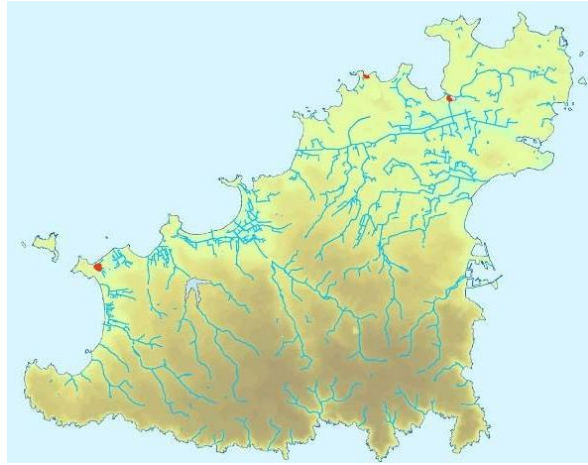
Threats – Loss of insects associated with stream valleys due to pollution incidents and eutrophication.



SALT MARSH



Glasswort and sea-blite in the salt marsh at La Rousse Mare in the Colin Best Nature Reserve



Distribution of salt marshes in Guernsey in 2010, indicated in red

SALT MARSH

HABITAT

Salt marshes occur where an area, between high water at neap tides and high water at spring tides, is sheltered from the force of the waves in an inlet or behind a shingle bank where situated next to a saline lagoon. Salt tolerant plants grow and soil builds up, allowing colonisation by other plants. Salt marshes have various zones of vegetation, which are dependent on how often the plants are covered by the sea, as different species vary in their tolerance of salt water. All Guernsey salt marshes are at the upper end of the tidal range. Glasswort is found at the mean high-water level and thus at the lower end of local salt marshes, while saltmarsh rush is at the upper end where the saline influence is only slight.

Salt marsh is a very rare habitat in Guernsey, and even rarer in the other Channel Islands. The majority of the Island's salt marshes were lost when the Braye du Valle, a tidal channel separating the northern part of the Island from the rest, was drained in the 1806. Further losses occurred when the sea walls were built and yet more when marshy areas inland of the west and east coasts were reduced as salt water was excluded through a system of sluice gates.

Many characteristic species vanished with the loss of their habitat and so local marshes are depauperate compared to marshes on the adjacent French coast. Even so, salt marshes are important for the Island's biodiversity, containing many species of plants and invertebrates not found elsewhere on Guernsey.

SALT MARSH

Salt marsh is a very rare coastal wetland habitat in Guernsey.



Salt marsh fringing part of Pulus Pool.



1787: Main salt marshes extent mapped out in red by William Gardner for the Board of Ordnance under the Duke of Richmond. Some salt marsh had already been turned into salt pans. There were other small areas all along the lowland coast.

SALT MARSH

Saline conditions make it difficult for most plants to grow. Adaptations include limiting freshwater loss from their leaves by any of the following methods:

1. reducing the leaves to scale-like structures to reduce surface area for transpiration, like glasswort
2. becoming succulent in order to store water, like glasswort and annual sea-blite
3. increasing the thickness of the cuticle, like sea aster
4. having a waxy or mealy surface coating, like sea-purslane.

Typical plants

Two plants that turn red in summer:

1. glasswort which is so-called because it was once used as a source of potash for glass-making. Related species are sometimes eaten as an herb with fish and sold under the name of *samphire*
2. annual sea-blite.

Sea aster is found at the Vale Pond and La Claire Mare, and although it only has a small population it has specialised insects associated with it, such as the gall-forming, pattern-winged fly *Campiglossa plantaginis*.

Sea club-rush is a large rush-like plant found at the Vale Pond and also around the coast at high tide mark in freshwater flushes (see pages xxx).

TYPICAL PLANTS



Glasswort, *Salicornia ramosissima*



Annual sea-blite, *Suaeda maritima*



Sea aster, *Aster tripolium*



Sea clubrush, *Bolboschoenus maritimus*

SALT MARSH

BRACKISH LOVING PLANTS



Sea-milkwort, *Glaux maritima*



Saltmarsh rush, *Juncus gerardii*



Left: Lesser sea-spurrey, *Spergularia marina*

Right: Associated weevil, *Gronops lunatus*



Sea-purslane, *Atriplex portulacoides*

Sea-milkwort is found in other brackish sites, such as around brackish pools above the high tide mark and salt marshes. It has small pink flowers.

Lesser sea-spurrey covers large areas at the Rousse Mare at the Colin Best Nature Reserve. It has a characteristic, strangely shaped, scaly weevil that feeds on its seeds.

Saltmarsh rush is found on the fringes of the marsh or where the sea seeps into soil near brackish ponds and lagoons, marking the maximum extent of the saline influence. Therefore, it is found around the edge of La Rousse Mare and at the lower end of La Claire Mare nearby, where saltwater seeps in at high spring tides. Historically, it was rather common all along the lowland coasts and present in marshy fields and brackish pools. When salt returns due to a change in the management of the sluice systems, this is one of the first plants to reappear.

Sea-purslane is a typical plant of the middle parts of salt marshes in Britain and France, but only similar site it is found in Guernsey is by Pulias Pond. Unusually, it is also common on the lower parts of the cliffs and on the artificial shingle bank-like area of dumped rubble by the coast road next to Rocquaine Bay.

Another, perhaps surprising, inhabitant is a subspecies of the greater plantain, *Plantago major* subsp. *intermedia*, which occurs in other damp areas, but seems most happy in saline marshes that are flooded by the sea in winter. Another local rarity is Salt marsh Goosefoot, liking bare, saline sites flooded during winter or high spring tides. Hard-grass also likes open, damp saline areas.

Typical animals

Many invertebrate species, particularly flies such as Dolichopodids and Ephydriids; specialised bugs; and Carabid beetles.

Salt marshes act as high tide refuges for birds feeding on adjacent shores. They are often important feeding grounds for migrating and wintering birds, when many waders can be seen at the Vale Pond, Pulias and La Rousse Mare. These include grey heron, little egret and curlew. Insect eaters include meadow pipits and yellow,

SALT MARSH

white and pied wagtails. The Rouse Mare is the primary staging post of the local breeding population of shelduck.

MANAGEMENT REQUIREMENTS

- The maintenance of natural, unhindered tidal patterns
- Grazing where practicable.

THREATS TO THIS HABITAT

The main threats to this habitat are:

- dumping
- loss of grazing
- draining and prevention of sea incursion
- pollution of the sea is another threat, should a major incident occur off the Island.
- reclamation.

Many people see the salt marsh habitat as uninteresting, untidy marshland and feel it should be tidied and reclaimed. There are annual calls in the correspondence column of the Guernsey Press for the brackish lagoon at Pulias to be filled in for these reasons, and this has very rich patch of salt marsh beside it. *La Société Guernesiaise* is vigilant in resisting these calls and most of the Island's small salt marsh areas are now included in protected areas.



Green leafy greater plantain, *Plantago major* subsp. *intermedia*, and the burgundy salt marsh goosefoot, *Chenopodium chenopodioides*, in La Rouse Mare on bare ground, which is wet in winter.

SALT MARSH

Salicornia spp.

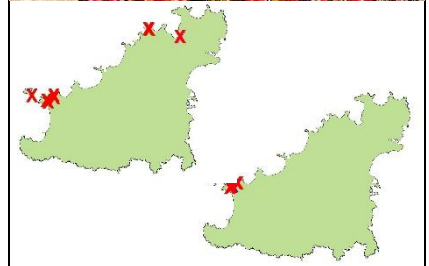
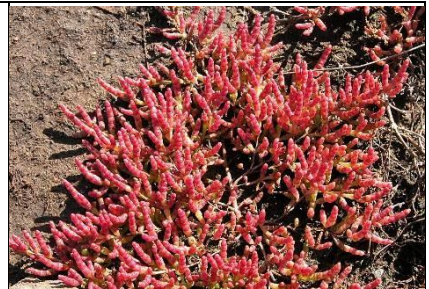
GLASSWORTS



Habitat – Salt marshes.

Comments – Purple glasswort, *Salicornia ramosissima*, grows in a few places in Guernsey and Lihou. The plant turns bright red in the summer colouring a whole area of the Rouse Mare. Common glasswort, *Salicornia europaea*, which does not turn red, and only occurs at Rouse Mare and nearby. It was not recognised as a different species in Marquand's time. Marquand recorded glasswort as "*Frequent in muddy salt marshes*". The sites he mentioned in particular were Pulias, Vale Pond, causeway to Rouse Tower and marshy field by Ivy Castle.

Threats – See Salt Marsh.



Glaux maritima

SEA-MILKWORT



Habitat – Saline habitats: sandy, muddy, rocky or grassy places.

Comments – Marquand regarded it as "*common in brackish marshes on the north and north-west coast from Rocquaine to the Vale; and at Lihou Island. Rarely among rocks at the foot of the cliffs in the south, as at Petit Port.*"

Now thoroughly rare, though still at Petit Port and some sites along the West Coast.

Threats – See Salt Marsh; especially prolonged closure of sluice gates.



Apium graveolens

WILD CELERY



Habitat – Damp, briar-like, usually brackish places including ditches.

Comments – Marquand recorded it as "*rather common in marshy places in low-lying districts, especially those within the influence of the sea where the water is more or less brackish*".

Now only known from a brackish ditch at Grandes Rocques and at just above the beach at Petit Port and Moulin Huet where there is some moisture.

Threats – Sea defence work on the west coast leading to less sea water inflow. The one remaining site on the west coast is very vulnerable to dumping, or bad or no land management.



SALT MARSH

Atriplex littoralis

GRASS-LEAVED ORACHE

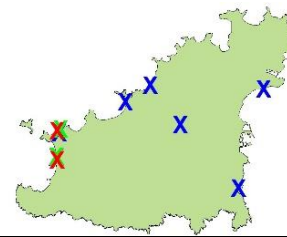


Endangered
Not Present
Protégée B-N

Habitat – Brackish areas near the sea.

Comments – At the moment this species is only found in two places in Guernsey, both on the landside of the coast road at Rocquaine and L'Erée, where it could be extirpated on purpose or by mistake quite easily. It is not a particularly attractive plant so most people would treat it as a weed. Marquand commented that it was "*frequent in the neighbourhood of L'Erée and Perelle. Spur Point, St Sampson's. Sparingly at Richmond.*"

Threats – Development, dumping, excessive trampling.



Bolboschoenus maritimus

SEA CLUB-RUSH



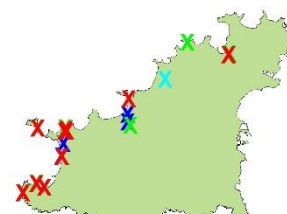
Vulnerable

Habitat – Wet places by the sea.

Comments – Marquand commented that it was "*frequent in salt marshes and brackish ditches throughout the low-lying districts: more often met with north of Ivy Castle.*"

Now found in just a handful of localities and generally over small areas as it is squeezed into the narrow remnant of habitat available.

Threats – See Salt Marsh; rock armouring, dumping.



Aster tripolium

SEA ASTER



Endangered

Habitat – Typical in salt marshes.

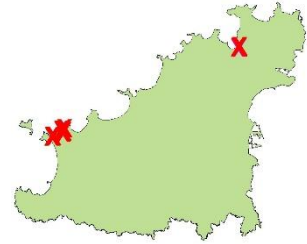
Comments – Almost certainly common in the marshes of the Braye du Valle. By Marquand's time, following the draining of the Braye, the habitat



SALT MARSH

had shrunk greatly. He described it as rare and saw it in marshes close to the Vale pond in profusion. He had seen scores of plants in flower in 1899. Few plants now remain, but a small population is also at the seaward end of La Clare Mare and La Rousse Mare. Biennial or sometimes annual

Threats – See Salt Marsh; especially prolonged closure of sluice gates to prevent saltwater entering Vale Pond.



MOBILE DUNE



Pont du Valle



Distribution of mobile dunes in Guernsey in 2010, indicated in red

HABITAT

Mobile dunes are those parts of sand dunes with a large amount of bare sand, where the sand can be blown by the wind. They occur mainly on the seaward side of a dune system where sand deposition is occurring. This is a rare habitat in Guernsey, occurring in a few bays, but much of northern Herm is surrounded by this habitat, and there are patches in Alderney notably at Saye Bay and Platte Saline. This habitat is much rarer now than it was in the past.

Most areas of mobile dune have been:

1. stabilised
2. dug for sand
3. dumped on with quarry waste - mostly at the end of the 19th century and beginning of the 20th century
4. surrounded by a sea wall - mostly built in the 19th century
5. dumped on with boulders in the mistaken belief that this will prevent coastal erosion better than mobile dunes do. This was because:

"Rock revetments were generally put in place without regard to structural engineering principles and, consequently, often failed to do the job intended."

(C. J. Hurley, pers. comm.)

MOBILE DUNE COLONISATION



Growing dune at Vazon



A: Sand couch, *Elytrigia juncea*, is usually the first grass to colonise a dune. **B:** Sand couch seen colonising a dune at Vazon Bay.

MOBILE DUNE

The cessation of grazing on the dunes has also led to a lack of open patches, which are so valuable.

There are two distinct zones:

1. *embryonic shifting dunes*
2. *white dunes*.

Low, embryonic shifting dunes, where exposure to saltwater flooding constrains the growth of marram, are vegetated by plants of the strandline mingled with salt-tolerant, sand-binding grasses.

The white dunes are open dunes along the shoreline typically with marram.

Typical plants

Mobile dunes are a difficult habitat for plants to grow in as they have to cope with moving sand, lack of nutrients and drought as sand is very porous and often dries out, plus the desiccating effect of salt water. Mobile dune plants show some of the same adaptations as those growing on shingle banks, thus they often have waxy surfaces and/or fleshy leaves. Perennials and biennials have either deep tap roots, or an extensive network of roots. Annual or avoid the need to cope with a mobile habitat by having a short life.

At the seaward edge, salt-tolerant strandline annuals, sea sandwort, prickly saltwort, frosted orache and sea rocket, may be prominent. perennial sand-binding sand couch is usually the first grass to colonise embryonic shifting dunes. Like sea bindweed, it has a strong network of roots which anchors it despite the mobile habitat. Further up the dune, plants such as Portland spurge, sea holly, sea bindweed, sea couch, marram and sea stock occur, along with sea spurge and formerly, Ray's knotgrass.

The landward edge of mobile dune habitat, behind the sand couch, is dominated by marram. This is another important element in stabilising the sand.

TYPICAL SEAWARD PLANTS

Mobile dunes are difficult habitats for plants to colonise and either evolve similar adaptations to plants on shingle banks or avoid the issue by being annual. Seaward plants are more salt tolerant.



Sea sandwort, *Honckenia peploides*, is a plant with fleshy leaves and white flowers in spring.



Sea rocket, *Cakile maritima*, is also characterised by fleshy leaves, and pale lilac flowers.

MOBILE DUNE

TYPICAL LANDWARD PLANTS

These plants are less salt-tolerant but also play an important part in stabilising the dunes.



Sea holly, *Eryngium maritimum*, has glaucous leaves, due to a thick, waxy cuticle, and a long tap root.



Sea bindweed, *Calystegia soldanella*, is a perennial vine with fleshy stems, kidney shaped leaves and an extensive root network that grows in beach sand and other coastal habitats.



Marram, *Ammophila arenaria*, grows behind sand couch and is an important element to stabilise the sand.

MOBILE DUNE

Typical animals

Mobile dunes have a characteristic range of invertebrates, some of which are associated with the plants that live there. Sea rocket for instance is eaten by *Psylliodes marcida*, a species of flea beetle, which jumps off the plant and buries itself in the sand when disturbed. There are also predatory species, such as the large ground beetle *Brosicus cephalotes*, which lives in holes in the sand and preys on sandhoppers. This species goes into a catatonic state, it literally goes stiff and plays dead, when captured.

The Cornish shieldbug, *Geotomus punctulatus*, lives buried in the sand where it presumably eats

seeds. This bug is very common in the Channel Islands, but only found in England at Whitesand Bay in Cornwall.

The silvery leafcutter bee, *Megachile leachella*, is another mobile dune specialist.

TYPICAL MOBILE DUNE INVERTEBRATES

A characteristic range of invertebrates occurs on mobile dunes.



Top: *Brosicus cephalotes*, a nocturnal coastal ground beetle that preys on sandhoppers and lives in holes in the sand. Bottom map: Its distribution.



Cornish shieldbug, *Geotomus punctulatus*, is very common in the Channel Islands but restricted to Cornwall in the UK.



Distribution map of silvery leafcutter bee, *Megachile leachella*, nesting records

MOBILE DUNE

MANAGEMENT REQUIREMENTS



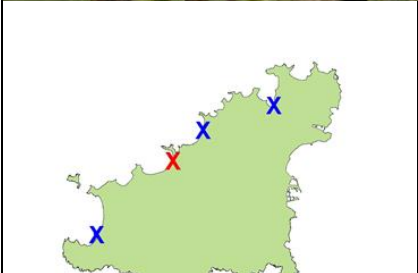


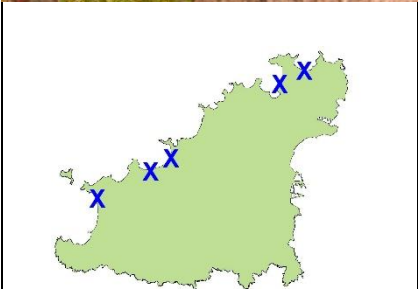


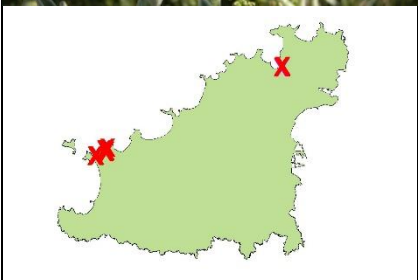
- No building of sea defences where mobile dunes exist; dunes provide better a coastal protection by absorbing the force of waves, unlike rock surfaces.
- Not digging out rock-armouring or walls where they are buried by sand.
- Avoidance of removal of loose sand at the top of beaches, where possible, to allow mobile dunes to grow.
- Allowing sea defences to decay, where possible, or removing them where appropriate. Although the anti-tank wall backing L'Ancrese beach is not strictly a sea defence, removing it would benefit the ecology of the area significantly.
- Removal of gorse and brambles, where practical.
- Use temporary fencing, where necessary, to limit heavy trampling, but some trampling is valuable as it enables the habitat to persist

by creating bare sand in fixed areas of the dunes.

THREATS TO THIS HABITAT

The main threat is the building of sea walls and other coastal defences, such as rock armouring. This habitat is also particularly vulnerable to loss of vegetation on beach access paths, leading to blowouts (sandy depressions caused by the removal of sediments by wind). This has led to another threat: attempts to stabilise the dunes by planting gorse to help stop erosion. In addition, the public also puts pressure on the authorities to stop blown sand affecting their properties; often, developing dunes are dug out to stop this happening. Finally, cessation of grazing and/or trampling will lead to *closed* turf (a continuous layer of herbaceous vegetation).

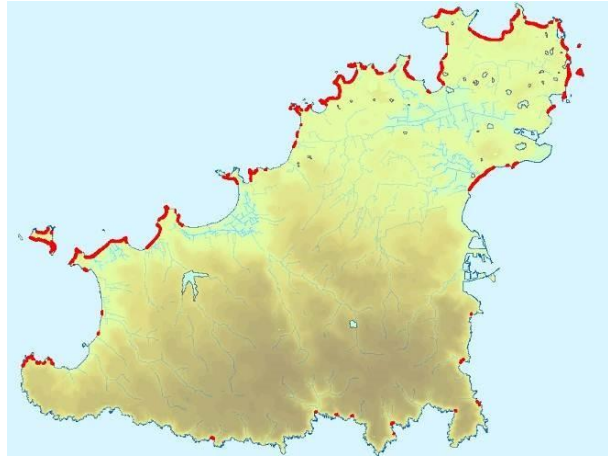
MOBILE DUNE

<p><i>Polygonum oxyspermum</i> RAY'S KNOTGRASS</p> <p>Habitat – At the top of sandy beaches.</p> <p>Comments – This is a very unassuming plant. During Marquand's time, it was common all along the west coast, particularly at Rocquaine and the west side of L'Ancrese. Now it is only known around the Martello Tower at Vazon. It has most likely declined, like other plants of open sandy areas, due to loss of habitat following the construction of sea walls in the 19th century; dumping of quarry waste; sand extraction for building; rock armouring; and finally, loss of grazing may also be relevant.</p> <p>Threats – See Mobile Dune. Current threats are: weed killing; landscaping and clearing up around the tower.</p>	 <p>Critically endangered Extinct Protégée B-N</p>	 
<p><i>Euphorbia paralias</i> SEA SPURGE</p> <p>Habitat – Found on open sand dunes. It also occurs on fine shingle as in Jersey and Alderney.</p> <p>Comments – Marquand called it rather rare, but noted that it occurred "<i>all along the sand shores of the north and north-west as far as Rocquaine Bay. More plentiful on the Vale coast.</i>" McClintock remarked that "<i>it still grew at L'Ancrese ...and apparently decreasing. It has also been recorded from near Bordeaux harbour, but nowhere else since the Flora</i>". As with other species, loss of habitat has been taking place for circa 150 years. Open dune is crucial for its survival.</p> <p>Threats – See Mobile Dune.</p>	 <p>Extinct Endangered</p>	 
<p><i>Matthiola sinuata</i> SEA STOCK</p> <p>Habitat – Only found on mobile sand dunes in Guernsey; Outside the Island, it is also recorded on sea cliffs.</p> <p>Comments – It was very common in 1872, but by Marquand's time it was "<i>rare</i>". The 19th century sea walls and quarry dumping almost certainly were instrumental in this decline. He recorded it in "<i>sandy fields and on the sand-hills of the lowlands. Rousse Martello Tower. Portinfer. Rocquaine Bay, rather plentiful. Les Vardes, near Ronceval.</i>" McClintock noted it only from Rousse and, more precariously, at Portinfer. Today, although scarce, it has benefitted from individuals distributing seeds to all its old haunts to ensure its future survival.</p> <p>Threats – See Mobile Dune.</p>	 <p>Endangered Endangered Extinct B.N Vulnerable</p>	 

SHINGLE BANK



Shingle bank at Fontenelles Bay



Distribution of shingle banks in Guernsey in 2010, indicated in red

HABITAT

Much of the coast of the northern part of Guernsey is surrounded by shingle banks, or pebbly beaches. There are shingle banks in other islands in the Bailiwick: in Sark, the best is at Dixcart Bay; and in Alderney, the most notable ones are at Crabby and Clonque Bays.

In Guernsey, most shingle banks are not growing. They were formed as the sea level rose after the last ice age, pushing stones from the bed of the English Channel with the shifting shoreline. However, some are growing, due to dumped material provided unintentionally by man such as ships' ballast and quarry waste.

Beaches like this are rare globally. Outside north-west Europe, they are only found in Japan and New Zealand. See

<http://www.sussex.ac.uk/geography/researchprojects/BAR/Biodiversity/biodiversity.html#subitle1>

In Guernsey, a few shingle banks are vegetated as they reach above the high spring tide-mark; these provide further habitat where they have a landward slope. Many others abut cliffs or sea walls and are too low to have plant cover.

There has been a significant loss of vegetated shingle bank tops in the since the mid-19th century. Factors in their demise include:

1. facing with a sea wall in the 19th century
2. being surfaced and used as a coast road

3. dumping of quarry spoil, on top of or on the seaward side of some in the late 19th and early 20th centuries
4. removal for use in concrete for defences during the Occupation
5. being buried or faced with rock armouring in the latter half of the 20th century
6. the secondary effects of changing tidal patterns following various constructions.

Subsequently however, dumped quarry spoil and sailing ships' ballast has been incorporated into various shingle banks, giving them a noticeably different look with angular stones and the odd brick or concrete block! Typical

SHINGLE BANK

Shingle banks are common around the northern part of the coast.



Shingle bank in Lihou

SHINGLE BANK

TYPICAL PLANTS

Vegetated shingle is an internationally rare habitat! It is made up of highly specialised plant communities that are adapted to this inhospitable environment. Not only do they need to deal with salt spray, but also cope with the shifting nature of shingle banks. Different plants have different strategies and the plant communities develop distinct zones.



One of the first pioneer species is sea-kale, *Crambe maritima*.



Other pioneer species include yellow horned-poppy, *Glaucium flavum*, and sea radish, *Raphanus raphanistrum* subsp. *maritimus*, at Les Anguillières - L'Érée shingle bank.



Sea rocket, *Cakile maritima*, on a shingle bank at Fort Richmond.

vegetation seems much more reluctant to return unaided.

Shingle banks are a particularly difficult habitat for plants to grow in, and have a specialist flora. On the seaward side of the bank, the stones are being continually disturbed by waves. On the landward side, there is usually little soil between the stones and the water table may be a long way down. Plants that grow on these banks often have very long roots and some have waxy cuticles or other adaptations to conserve water.

Typical plants

These plants include yellow horned-poppy, sea kale, bittersweet and sea beet, but other plants like sea radish, sea campion and rock samphire also occur.

SHINGLE BANK

Typical animals

Among the most interesting is the scaly cricket, *Pseudomogoplistes vicentae*, confined in Northern Europe to a few beaches around the English and Bristol Channels.

Other animals on the seaward side of the banks are a mixture of animals coming up from the beach, such as sea slaters, sandhoppers and seaweed flies; and those coming from the land, such as Carabid beetles, centipedes, and woodlice. The seaward side of banks are often important for nesting wading birds such as ringed plovers and oystercatchers, but in Guernsey the birds are likely to be disturbed by walkers and dogs. Many species nest and forage on the landward side of shingle banks, including stonechat.

when shallow, as this slope absorbs more of the force of the waves and so dissipates their power protecting the land. The slope will naturally increase during the summer and flatten out in the winter.

- The return of storm-thrown material on roads to a shingle bank to avoid the net loss of stones over time.
- Removal of gorse and brambles so that the appropriate flora can flourish, plus this allows the shingle to move and act as an effective sea defence.
- Maintaining species-rich grasslands nearby will encourage insects that will also visit plants on the shingle banks and help ensure pollination.

MANAGEMENT REQUIREMENTS

- Maintenance of a shallow slope, where achievable, during the winter. The shingle bank works best as a protective sea defence

SHINGLE BANK ANIMALS – SCALY CRICKET

Among the most interesting invertebrates is the scaly cricket, *Pseudomogoplistes vicentae*, also known as the Atlantic beach-cricket, which, in Northern Europe, is confined to a few beaches around the English and Bristol Channels.



Left: scaly cricket, *Pseudomogoplistes vicentae*, drawing by Rosie Coulomb



Right: Map of scaly cricket distribution circa 2010

SHINGLE BANK

IMPORTANT SHINGLE BANKS

Shingle banks are an important natural defence against the sea. They change shape through the seasons and support a unique, specialised and rare community of plants and animals.



A small shingle beach at Fort Hommet.



Les Anguillières, L'Érée, the highest shingle bank in Guernsey.



Shingle bank at Belle Grève Bay, the natural edge to an important wildlife area between St. Peter Port and St. Sampson.

THREATS TO THIS HABITAT

Nowadays, the main threats to the vegetated shingle habitat in Guernsey are:

- habitat destruction, followed by the spread of brambles and gorse. The latter have been planted in the past either to provide scrub cover for birds or to limit public access to sensitive bird-nesting areas.
- Lack of sediment supply is a problem with some banks. This is exacerbated by the removal of beach debris, rather than returning the stones to the same or a nearby shingle bank.
- The driving of 4x4s and motorbikes onto vegetated banks damages the flora and fauna as well as potentially affecting the integrity of the bank.
- The bank at L'Érée is sometimes breached by storms and is then reshaped by mechanical diggers. If the bank is reshaped with too steep a profile, it is vulnerable to further storm damage. The work can cause damage to flora and fauna around the break.
- Pollution – especially marine oil spills.

SHINGLE BANK

Pseudmogoplistes vicentae

SCALY CRICKET

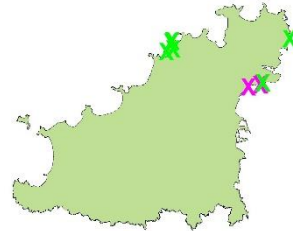


Habitat – Under stones on pebble banks or the top of pebbly beaches.

Comments – IUCN Red list status: **globally vulnerable**.

All the records locally are of the subspecies *septentrionalis*, which is only found around the Western English Channel. The map does not include the results of a survey carried out in 2019. It was recorded at several new sites as a result. Mapped data is not yet available.

Threats – Habitat destruction, pollution, rock armouring or other disturbances to the banks or beaches.



Glaucium flavum

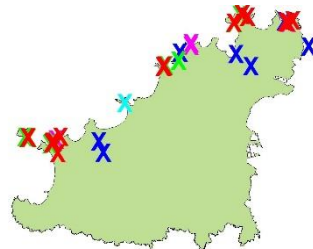
YELLOW HORNED-POPPY



Habitat – Mainly on maritime shingle. Also found on other substrates, like dunes, but always on well-drained soils. In Guernsey, now almost exclusively on shingle.

Comments – In Marquand's time it was "*locally common all along the coasts of the north and north-west; abundant on the shingle at L'Erée*". By McClintock's time, it was hardly more than occasional away from the shingle banks at L'Erée and Hougue Patris. It would benefit from re-introduction to various places where spoil and ballast have re-created banks, but which remain un- or under-vegetated. Biennial or short-lived perennial.

Threats – See Shingle Bank.



Charadrius hiaticula

RINGED PLOVER



Habitat – Shoreline feeder. Shingle, sand and short grassland areas for breeding.

Comments – Now an occasional breeder, greatly declined as a winter visitor.

*In the UK, the breeding population is near threatened; the non-breeding population is vulnerable.

Smith: "*Very common ...in places suited to it... Some remain throughout the summer, and a few of these, but certainly very few, may breed.*"

Bisson: "*Breeds;...Common winter visitor and migrant.*"

Threats – Disturbance and trampling. Predation of young by rats.



SHINGLE BANK

Haematopus ostralegus

OYSTERCATCHER



Habitat – Shingle banks and at base of cliffs for nesting. Feeds on the coastline generally.

Comments – Declining breeder. 0; or two pairs of oystercatchers attempt to nest each year at Les Anguillières, L'Érée shingle bank, but are usually disturbed.

Smith: *"resident all the year, and breeds ...however, its numbers are considerably increased in the autumn by migratory arrivals...immense flocks...in about October and November."*

Bisson: *"Breeds; fairly common resident. Common winter visitor and migrant."*

Threats – Disturbance by dogs, mountain bikes, irresponsible coastering or motorbikes; predation of young by dogs and rats, especially on shingle banks.

See also Shingle Bank, and Coastal Rock and Hard Cliff.

COASTAL ROCK AND HARD CLIFF



Coastal rock at Houmet Herbé



Hard cliff looking towards the Pea Stacks

HABITAT

Coastal rock occurs around much of our coastline, particularly where it has not been developed. At first glance it may appear to be a fairly sterile habitat, but in fact it supports many organisms, lichens being the first colonisers. The rocks around Guernsey's coast provide locations for at least 160 different lichen species.

Typical plants

Coastal rock and hard cliff support few plant species. Some plants can get their roots into tiny cracks with the minutest amount of soil, and are able to tolerate drought conditions and sea spray.

Typical plants include:

- English stonecrop
- Golden-samphire
- rock samphire
- rock sea-lavender
- sea campion
- sea plantain
- sea-purslane
- thrift.

HARD CLIFF

Much of the south coast consists of hard cliff.



Hard cliff at Jerbourg Point.

COASTAL ROCK AND HARD CLIFF

TYPICAL PLANTS



Thrift, *Armeria maritima*



Golden-samphire, *Inula crithmoides*



Rock samphire, *Crithmum maritimum*



English stonecrop, *Sedum anglicum*

TYPICAL PLANTS



Sea plantain, *Plantago maritima*



Sea-purslane, *Atriplex portulacoides*, is more common on hard and soft cliffs in Guernsey, whereas the literature states it inhabits salt marshes.



Rock sea-lavender, *Limonium binervosum*, forms delicate patches in some of the most inaccessible parts of the cliffs.

COASTAL ROCK AND HARD CLIFF

Lichens

On most coastal rocks there is a zonation of lichen species.

Lowest: The lowest black zone consists of a crustose black lichen *Verrucaria maura*, which many people mistake for a line of spilled oil.

Middle: Above this are found yellow species such as *Xanthoria* and *Caloplaca*.

Upper: Then comes a grey zone, often including the *foliose* species, such as *Parmelia*, and the *fruticose* species, sea ivory, *Ramalina siliquosa*.

On hard cliffs, some species like map lichen, a flat patch bordered by a black line of spores, are highly sensitive to pollution.

AT RISK HARD CLIFF LICHEN



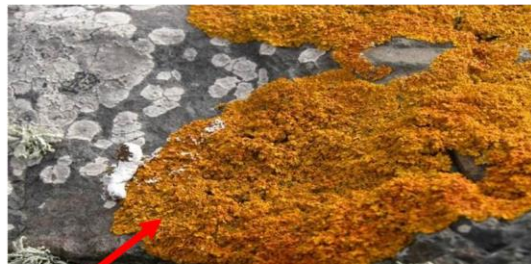
Map lichen, *Rhizocarpon geographicum*, only grows on rocks in areas of low air pollution.

LICHEN ZONING

On most coastal rocks there is a zonation of lichen species. Zoned lichens can be seen clearly at the Mediaeval breakwater at Divette, as shown below.



Grey zone lichen, *Ramalina cuspidata*



Yellow zone lichen, *Xanthoria aureola*.



Black zone lichen, *Verrucaria maura*, which grows at the high tide level.

COASTAL ROCK AND HARD CLIFF



The grey smoke caterpillar, *Luffia lapidella*, eats lichens and is named after the Guernsey entomologist W.A. Luff.



Greater black-backed gull nest at Pleinmont.

Typical animals

The most common invertebrates in this habitat are insects, mites and spiders. Some, such as mites, can be found grazing on lichens.

Oystercatchers, herring and black-backed gulls, and kestrels use the more inaccessible rocks for nesting and roosting. Some rarer birds, such as ravens, fulmars and peregrine falcons, also nest here.

MANAGEMENT REQUIREMENTS

- Removal of Hottentot-fig where possible.

THREATS TO THIS HABITAT

- Hottentot-fig is probably the greatest current threat to vegetated areas, as it overwhelms native plants and covers the cliffs where it can.
- Atmospheric pollution is destructive to lichen communities.
- Coaststeering, climbing and paragliding are threats if carried out without consideration of the impacts to wildlife, most obviously nesting birds.
- Other threats would include development on the cliff areas or any form of disturbance of the rocks, both of which are low risks locally at present.

INVASIVE NON-NATIVE THREAT



Hottentot-fig, *Carpobrotus edulis*, at Mont Herault

COASTAL ROCK AND HARD CLIFF

Teloschistes flavicans

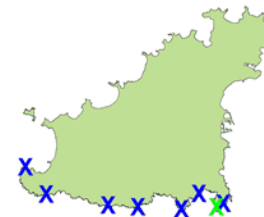
GOLDEN HAIR-LICHEN



Habitat – Windswept rocks in misty areas locally.

Comments – Only one site now known in Guernsey with about 20 thalli. It was more widespread during Marquand's time. Highly pollution-sensitive.

Threats – Growth of scrub covering up the cliff face; air pollution.



Rumex rupestris

SHORE DOCK

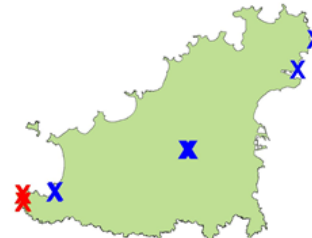


Habitat – Where freshwater runs onto a beach.

Comments – This is the rarest dock in Europe, with a distribution from Wales to Spain.

In Guernsey, plants were recorded at three sites at the bottom of the cliffs at Pleinmont during the last survey, numbering about 20 plants. They are probably safe from most threats except heavy oil pollution or rising sea levels. However, the two plants in Herm have disappeared in the last 10 years.

Threats – Pollution from the sea.



Carex distans

DISTANT SEDGE



Habitat – Brackish and freshwater marshes, wet rocky places, mostly near the sea.

Comments – Marquand stated that this was "frequent in marshy places in the low-lying districts, especially near the coast. Base of the cliffs in St. Martin's in a few places and ...at the Forest."

Threats – See Marshy Grassland, Salt Marsh. Pollution from the sea; irresponsible coasteering.



COASTAL ROCK AND HARD CLIFF

Carex punctata

DOTTED SEDGE



Habitat – Similar to distant sedge, but more strictly coastal.

Comments – Marquand commented that this was "rare. Grande Mare, scattered all over the marsh, but thinly. In a cliff stream near Icart, scarce. Upper Moulin Huet Valley, where Gunnera grows, a few roots. Claire Mare, near Perelle. Jaonnet Valley, and on the shore of a bay west of Jaonnet." It has shrunk in distribution significantly over the last 100 years.

Threats – See Marshy Grassland, Salt Marsh. Pollution from the sea. Irresponsible coasteering.



Carex extensa

LONG-BRACTED SEDGE



Habitat – Brackish places by the sea, but in Guernsey, almost exclusively at the base of the cliffs on the rocks where they meet the slumping soil of the cliff, where it is within reach of salt spray and damp.

Comments – Marquand stated that this was "rare. Near the Vale pond, but not plentifully. On rocks above the high-water mark at Petit Port. Marshy field between Cobo and Mare de Carteret. Base of cliffs west of Petit Bot Bay." Recent records are all from at the base of the cliffs.

Threats – Irresponsible coasteering.



Schoenus nigricans

BLACK BOG-RUSH



Habitat – Damp peaty places, bogs, salt marshes, flushes.

Comments – Marquand found it "rare, though plentiful where it occurs. Grande Mare. On the shore at Cobo, going westward. Marsh between Vazon and Albecq. Field near Grandes Rocques Hotel."

McClintock stated it was still in the Grande Mare, at Cobo and Grandes Rocques. Of these, the only site where it is now found is on the shore at Cobo, going westwards towards Albecq, in patches in damp areas under the short cliff line.

Threats – See Coastal Rock and Hard Cliff, and Rock and Boulder Beaches.



COASTAL ROCK AND HARD CLIFF

Phalacrocorax aristotelis

SHAG



Habitat – Nests on hard cliffs; fishes at sea- often flying low over the water between dive sites. Also rests on rocks both onshore and offshore.

Comments – Declined due to poor breeding success in recent years.

Smith: *“The most numerous of the sea birds which frequent the Islands, the herring gull not excepted, every nook and corner of the high cliffs in all the Islands been occupied by scores of shags during the breeding season.”*

Bisson: *“Breeds; common resident and migrant.”*

Threats – Overfishing; predation of young by rats; poor visibility in water due to dredging and subsequent storms creating turbidity. The latter leads to poor fishing returns and starvation of many young or, the birds being in too poor condition to breed. Pollution may be a factor too.

★
PLACEHOLDER
PICTURE

Sterna hirundo

COMMON TERN



Habitat – Nests on rocky islets. Fishes at sea, hovering then diving.

Comments – Declined due to poor breeding success in recent years. Many sites, such as Brehon Tower, have been abandoned or largely abandoned.

Smith: *“is a regular, but not numerous, spring and autumn visitant..., some remaining to breed...I do not know that it breeds on Guernsey itself”*. Then as now it seems to have used islets for breeding.

Bisson: *“Breeds; not common summer visitor with small numbers breeding on offshore islets. Fairly common migrant.”*

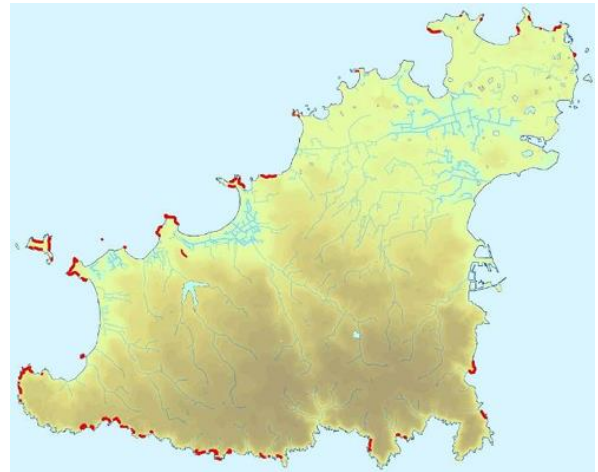
Threats – Disturbance is the major factor, along with predation of young by rats.

★
PLACEHOLDER
PICTURE

SOFT CLIFF



Soft cliff at Pleinmont



Distribution of soft cliff in Guernsey in 2010, indicated in red

HABITAT

Soft cliffs in Guernsey consist of head, loess and, in some areas, sand. They may include a zone of raised beach material such as pebbles. Sea, wind, rain and groundwater seepage all contribute to landslides and wearing away of these cliffs. The surface often erodes rapidly and so is characterised by a largely plant-free surface.

It is a vital habitat for a variety of solitary bees, wasps, and sand martins, as well as tiger beetles, especially if exposed to the sun during part of the day. The vegetation-free nature of the surface means that it heats up relatively quickly during the day, which is of significance especially to insects as this enables them to warm up before flight. The soft nature of the soil enables animals to dig burrows in it easily and some banks are peppered with their holes. As Buglife (Buglife.org) states:

"They thrive in a place that's being constantly eroded by the sea and weather – they love living life on the edge."

Some insects also use bare hedgebank sites inland, where available, but many are coastal specialists and, along with sand martins, are wholly dependent on the continued survival of this habitat.

Typical plants

Where the slope is shallower and not so rapidly eroding, typical plants include thrift, sea campion and rock sea-spurrey. Sea-purslane is found in some places along the south and west coasts.

Typical animals

Soft cliffs are home to a wide variety of animals. Including nesting sand martins which are now only at L'Érée headland, as well as green tiger beetles and a variety of solitary bees. Solitary bee species include:

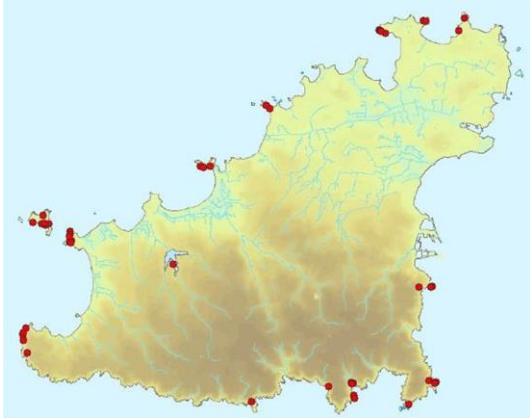
- bronze furrow bee, *Halictus tumulorum*
- coastal leafcutter bee, *Megachile maritima*
- ivy bee, *Colletes hederæ*
- silvery leafcutter bee, *Megachile leachella*
- Smeathman's furrow bee, *Lasioglossum smeathmanellum*
- violet-winged mining bee, *Andrena agilissima*.

SOFT CLIFF

TYPICAL ANIMAL



The green tiger beetle, *Cicindela campestris*, is a common ground beetle. It is one of our fastest beetles and an agile daylight hunter. It has a wide range of prey including spiders, caterpillars and ants.



Distribution map of the green tiger beetle,

MANAGEMENT REQUIREMENTS

- No re-instatement of rock-armouring where this has collapsed.
- Removal of Hottentot-fig, *Carpobrotus edulis*, where possible.

THREATS TO THIS HABITAT

- One of the main threats is the use of rock-armouring or walls built to protect the coast, which will not prevent long-term erosion, but restrict or block access for animals that nest in these areas. This leads to localised losses and ultimately may cause extinction of species.
- As with hard cliffs, the spread of Hottentot-fig is a serious threat to soft cliffs.



Soft Cliff at Pleinmont

SOFT CLIFF

Riparia riparia

SAND MARTIN



Critically
Endangered

Habitat – Vertical sand or earth banks, so soft cliffs are ideal for nesting. Feeds on insects over and near water.

Comments – Declined and now small vulnerable population. Smith did not come upon any nests so assumed it was just a spring visitor.

Bisson: "*Breeds; scarce summer visitor. A reduction in breeding numbers since the 1960s. Fairly common migrant.*"

Threats – Loss of soft cliffs due to rock armouring and Hottentot-fig; disturbance by dogs; loss of species-rich wetland habitats for insects.



PLACEHOLDER
PICTURE

INTERTIDAL SAND



Vazon Bay



L'Ancrese Bay

HABITAT

There are a number of sandy beaches in the Bailiwick. In Guernsey these generally form bays in between rocky headlands and have further rocky outcrops within the bays. The sand is mostly fine and pale yellow.

In Herm, however the beaches form the seaward fringe of a large area of sand dunes covering the north end of the Island. Of these Shell Beach is notably coarse and very pale coloured due to the high content of shells, both whole and ground.

Typical plants

This is a difficult habitat for plants due to its inhospitable shifting nature. However, eelgrass is exposed by the biggest spring tides.

Typical animals

It has a variety of animals living in the sand. These are generally not obvious, but there may be signs of their presence such as worm casts and tubes.

The sand mason worm, *Lanice conchilega*, is often common on the lower half of sandy shores, especially where the beach has some protection or where there are adjacent rocks with weed, which provides a source of edible detritus (Yonge, 1949). The lugworm, *Arenicola* sp. can also be abundant. As every worm creates both a cast and shallow depression or 'pit', the density of these is a clear indicator of population size. It

is most common where there is an admixture of organic matter in the sand (Yonge, 1949).

TRACE EVIDENCE

The presence of animals living in the sand can be detected by their activity.



Sand mason, *Lanice conchilega*, worm tubes.



Lugworm, *Arenicola* sp. worm casts and pits.

INTERTIDAL SAND

Fish may be present: some lie buried in the sand, mostly plaice, lesser weavers, and sand eels. Young plaice may be found barely covered with sand in pools, though adults will come in when the tide is up at night to feed. The lesser weaver is encountered around the low tide mark with only its spines showing. These are occasionally stood upon with painful results! The small sand eel buries itself in the sand around mid-tide and below, mostly evidenced by holes dug by fishermen digging for bait.

FISH: CAMOUFLAGE

Sometimes small fish, such as sand goby, *Pomatoschistus minutus*, will be found in numbers in shallow pools in the sand.



Molluscs are here too, but few are seen other than the scavenger, the netted dog whelk, *Tritia reticulata*, which can be seen when the tide is out, moving over areas of muddy sand.

During certain conditions the molluscs become more variable. On extremely low Spring tides certain bivalves may appear out of the sand, such as Norwegian cockle, *Laevicardium crassum* and dog cockle, *Glycymeris glycymeris*.

MOLLUSCS



A netted dog whelk at the edge of the sand

Extremely low Spring tides herald the appearance of other bivalves like the Norwegian cockle, *Laevicardium crassum*.

Paul Chambers, Marine and Coastal Manager, States of Jersey, commented:

"Norwegian cockles are impatient animals and rather than wait for the tide to return, they use their foot to hop about the beach. In the gravel at Grève d'Azette [Jersey] I have seen dozens of them all hopping simultaneously - they look like jumping beans."



Above: Cockle, probably Norwegian, with the foot coming out. **Below:** about to hop down the beach

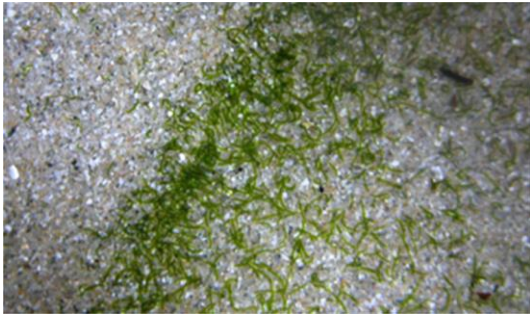
Photos: Wendy Bowman



INTERTIDAL SAND

OTHER SPECIES

There is a variety of other species present, perhaps the most unusual being the mint sauce worm. This is actually a flatworm that behaves more like a plant!



Mint sauce worm, *Symsagittifera roscoffensis*, at Cobo.



Black-headed gull in early spring before leaving to breed.



Left to Right: Oystercatchers, herring gull and brent geese feeding at the edge of the sea in winter.

Other bivalves are present, but not normally seen – these include razor shells, such as *Ensis* species, whose presence is only obvious when shore gatherers are foraging.

Other invertebrates. There is a variety of other, often minute, invertebrates living in the sand and providing important food for wintering waders and for gulls and oystercatchers throughout the year. Sandy beaches are of great significance to birds in winter. These birds can be seen feeding especially at the edge of the sea, probing the sand for invertebrates.

The Roscoff or mint-sauce worm, *Symsagittifera roscoffensis*, is a distinctive feature on Shell Beach and some beaches in Guernsey. It is a small, about 15 mm long, flatworm, whose green colour is due to the presence of the mutualistic microalga, *Tetraselmis convolutae*. When the tide goes out and water puddles form in depressions the flatworms gather together at the surface of these to provide optimal photosynthetic conditions for their symbiont.

Other signs of worms are the green eggs in translucent jelly bags glued to the sand; some of these may be left by *Eulalia viridis* and others by lugworms.

Oystercatchers, herring gulls and other resident gulls use the sandy shores for feeding all year. They are joined in winter by:

- black-headed gulls
- brent geese
- curlew
- dunlins
- grey plover
- redshanks
- ringed plover
- sanderlings.

On migration there is a chance of seeing bar-tailed godwits.

INTERTIDAL SAND

MANAGEMENT REQUIREMENTS







- Surveying the razor shell and other mollusc populations regularly to ensure that these are not being decimated by unregulated shore gathering.
- Banning dog walking from Vazon, Cobo and Belle Grève.
- Minimising removal of seaweed.

THREATS TO THIS HABITAT

- Pollution from the sea or runoff from the land.
- Rock armouring and other coastal defences are damaging to the shore profile leading to loss of sand.
- Excessive removal of seaweed (loss of habitat and feeding opportunities).
- Excessive bait-digging and collection of molluscs for food like razor shells.

- Dogs being walked off the lead disturbing birds feeding.
- Sand racing which disturbs birds feeding and causes compaction damage.
- Ploughing competitions resulting in destruction of sand fauna.
- Climate change. This affects the beach levels and wildlife with cooler-water species die off.
- Invasive non-native species.

INTERTIDAL SAND

<p><i>Calidris alpina</i> DUNLIN</p> <div style="text-align: center;">  </div> <p>Habitat – Sandy shores and sometimes on rocky areas on the beaches.</p> <p>Comments – dwindling wintering population. Smith: <i>“Resident in all the Islands throughout the year in considerable numbers, which are however immensely increased in the autumn by migratory arrives, most of which remain thought the winter.”</i> He had no evidence of breeders so assumed summer residents were non-breeders.</p> <p>Bisson: <i>“Common winter visitor and migrant. Non-breeding birds occasionally recorded in summer.”</i></p> <p>Threats – Disturbance by dogs leading to poor feeding success and stress.</p> <p>* Non-breeding bird populations endangered breeding birds vulnerable</p>	 PLACEHOLDER PICTURE
<p><i>Numenius arquata</i> CURLEW</p> <div style="text-align: center;">  </div> <p>Habitat – Sandy and rocky shores, marshy grassland and other coastal fields.</p> <p>Comments – Greatly declined and now a vulnerable winter visitor. Smith: <i>“A good many curlews are to be found in the Islands throughout the year, but I do not believe any of them breed”.</i></p> <p>Bisson: <i>“Common winter visitor and migrant. Small numbers of non-breeding birds present in summer.”</i></p> <p>Threats – Disturbance by dogs leading to poor feeding success and stress.</p>	 PLACEHOLDER PICTURE
<p><i>Branta bernicla</i> BRENT GOOSE</p> <div style="text-align: center;">  </div> <p>Habitat – Sandy and rocky beaches. Eelgrass beds and sometimes on coastal areas of grass.</p> <p>Comments – Vulnerable winter visitor with a decline in numbers.</p> <p>Threats – Disturbance by dogs. loss of eelgrass beds</p>	 PLACEHOLDER PICTURE

INTERTIDAL ROCK AND BOULDER



Perelle Bay



An East Coast scene looking towards Herm and Jethou with Sark in the background between them.

HABITAT

These are beaches characterised by rocks. Often sandy or pebbly patches occur; much more uncommon are small areas of clay, peat or mud between the rocks. Many beaches in Guernsey combine the three main habitats and people think of them as sandy, shingly or rocky depending on which is dominant. Rocquaine perhaps typifies this in that areas of all three can be found.

Areas of fine mud and silt are very unusual, but occur between the rocks in places such as the west coast of Herm.

At L'Érée below the shingle bank the beach is mainly rocky, but has areas of sand, clay, and a small exposure of peat. The latter being an example of post-glacial deposits from when the sea level was lower.

The rocks vary greatly in the life they support from beach to beach and within a bay. Factors that play a part include:

- the time of exposure to the air between tides
- the relative exposure of the beach to wind and waves
- the presence of offshore reefs protecting the beach
- the angle and orientation of the rock face
- how much is fixed rock and how much is free standing, i.e. boulders

- how mobile or unstable the boulders are
- the other substrates present

The range of habitat types classified under the JNCC's Marine Habitat Classification for Britain and Ireland includes anything from exposed to sheltered estuary type habitats. Much of the north-west coast is sheltered by offshore reefs so even our coasts that are exposed to the Atlantic waves and south-westerly winds are protected from the full force of the weather.

MICROHABITATS

Cracks: Micro-habitats include gullies and crannies and boulder undersides which enable species to *tuck in* or hide safely from predators, and from the drying effects of the sun. The latter are where much of the marine life of a boulder beach live and are a surprise to those unfamiliar with life below the rocks.

Rock pools are another important habitat on the shore. Factors that affect the plants and animals found in them: position on the shore, the sun and shade balance, crannies present, depth of water and the presence of pebbles, which will swirl round during rough weather so eroding surfaces and dislodging sessile animals and plants.

INTERTIDAL ROCK AND BOULDER

DIFFERENT ROCKY HABITATS

There is huge variety between rocky habitats. Some typical ones are highlighted below.



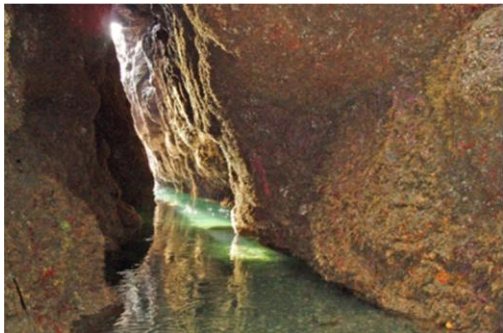
Part of Rocquaine bay, sheltered by offshore reefs.



L'Erée by Le Catoroc, showing peat and shingle.



Above: Exposed rocky coast by Le Souffleur at Baie de la Forge. **Below:** Sheltered rock surfaces in one of Les Gouliot caves in Sark. Sea caves do exist in Guernsey, but are much less studied and photographed!



As the substrate is much more stable than that of a sandy beach, there is much greater variety of wildlife to be found. Thus, only a small selection of typical plants and animals are mentioned of the huge range present.

ROCKY MICROHABITATS

Just some of the huge range of rocky microhabitats found on Guernsey.



Underside of a boulder on Lihou causeway.



Deep rock pool at Pleinmont with a variety of seaweeds and animals.



Rock pool near Fort Hommet. Its pebbly bottom means it is much less well-populated.

INTERTIDAL ROCK AND BOULDER

Typical plants

The most obvious demarcation between the land and the tidal zone is marked by a thick black zone of the lichen, *Verrucaria maura*.

Moving down into the inter-tidal zone, the plant-life is dominated by *vraic* or *wrack* in English. These are the brown masses seen in many coastal scenes. These wrack species are strongly zoned:

1. top of the beach: channelled wrack, *Pelvetia canaliculata*
2. next: flat wrack, *Fucus spiralis*
3. followed by: bladder wrack, *Fucus vesiculosus*, and knotted wrack, *Ascophyllum nodosum*
4. finally: serrated or toothed wrack, *Fucus serratus*, forming the lowest wrack zone.

Right towards the low of Spring tides, the big kelps, the *Laminaria* species take over, most notably the oarweed, *Laminaria digitata*, and tangle or cuvie, *Laminaria hyperborea*. Other species of *Laminaria* generally grow beyond the reach of most low tides, but form part of the seaweed detritus that can be seen along the shores after storms.

Many other types of seaweed are present, the green *Enteromorpha* species and sea lettuce, *Ulva lactuca*, standing out due to their pale green colour, often in places where fresh-water runs onto the beach. Velvet horn, *Codium* species are also fairly common.

Most red seaweeds are found lower down the shore and there is a great variety of them, many of which are difficult to identify. Whole areas of rock can be covered in a thick *turf* of dark brown-red grape pip weed, *Mastocarpus stellatus*, carrageen, *Chondrus crispus*. Until the 1940s this was thought a different species and called *Petrocelis cruenta*. Other patch-formers include pepper dulse, *Osmundea pinnatifida*.

Another common patch-forming red alga, this time with stiff, pale pink branches due to the presence of calcium, is coral weed *Corallina officinalis*. Flat patches of calcareous, red algae are common. These are more like lichens in

SEAWEEDS

The British Isles is globally important for seaweeds, being home for more than 650 species. Guernsey has 214 species of seaweed recorded on Lihou causeway alone!



Zone 3: Bladder wrack on a mid-shore rock



Zone 4: Grape pip weed and serrated wrack low down on the shore.



Seaweeds on a boulder include velvet horn and the pink encrusting coralline algae *Lithothamnion* sp. The shiny black area is the tetrasporophyte stage of the grape pip weed. **Below:** Tuning fork weed



INTERTIDAL ROCK AND BOULDER

appearance, being hard and crust-like. The most common of these is *Lithophyllum incrustans*. Other red seaweeds grow as epiphytes, such as the red tufts of wrack siphon weed, *Vertebrata lanosa*, which grows on knotted wrack.

Rock pools have their own distinctive flora and fauna. Small sea weeds abound such as coral weed, but larger ones such as the pale brown tuning fork weed, *Bifurcaria bifurcata*, are there too, especially lower down the shore. Encrusting coralline algae are plentiful.

Typical animals

Where the substrate is largely fixed the rock face can be covered with barnacles and limpets, especially the Montagu's stellate barnacle, *Chthamalus montagui*, and common limpet, *Patella vulgata*. Top shells are found all over the rocks and in pools. These are dominated by the thick topshell, *Phorcus lineatus*, near the high part of the shore, with flat topshell, *Steromphala umbilicalis*, and Pennant's topshell, *Steromphala pennanti*, extending further down and lower down still the grey topshell, *Steromphala cineraria*.

The painted topshell, *Calliostoma zizyphinum*, and turban topshell, *Gibbula magus*, may be seen only at extreme low water i.e. on exceptional spring tides.

Night-time may reveal more inhabitants, such as the sea slater, *Ligia oceanica*. This large isopod is a relative of the woodlouse and will be out and about at the top of the shore to feed especially on channelled wrack, but taking all sorts of food.

TOPSHELLS

Top shells are found all over rocky surfaces, both on the rocks themselves and in pools. While they do not follow the stricter zoning of the wrack seaweeds, they have different preferred locations.



High shore: Toothed top shell is the main species found in rocky habitats on the high shore.



Mid shore: Flat and Pennant's top shells are located lower down the shore.



Low shore: The painted top shell is so far down the shore it is typically only seen when there is an extremely low water level on exceptional Spring Tides.

INTERTIDAL ROCK AND BOULDER

ANEMONES

These slow-moving predators occupy a variety of microhabitats on rocky shores.



Crevices: Gem anemone at Petit Bot.



Vertical surfaces and overhangs: the strawberry anemone is a rarer inhabitant of the lower shore. Seen here at Moulin Huet.



Rock pools: the preferred habitat of the snake-locks anemone. Both green and brown forms are very common.



Rock pools: the trumpet anemone is much rarer than the snake-locks.

Crannies and surfaces shaded from full exposure to the sun may contain a wide variety of other creatures such as the carnivorous dog whelk, *Nucella lapillus*, sponges, compound sea squirts, anemones and high up on the shore, rough periwinkles, *Littorina saxatilis*. Commonest of the anemones is the beadlet anemone, *Actinia equina*, but in rock crevices lower down the shore, gem anemone, *Aulactinia verrucosa*, and daisy anemone, *Cereus*

pedunculatus, are well hidden often in crevices. The strawberry anemone, *Actinia fragacea*, is a rarer inhabitant of the lower shore on vertical surfaces and under overhangs.

The most obvious of the sponges is the breadcrumb sponge, *Halichondria panicea*, and one of the most common of the colonial sea squirts is *Botryllus schlosseri*, which can have wonderful back-ground colours of the gelatinous 'matrix' to its star patterns, including deep blue and yellow.

Cracks may also harbour worms such as the bright green *Eulalia viridis*.

In caves, sheets of animals may coat the walls where there is enough light and shelter. These include barnacles, beadlet and jewel anemones, *Corynactis viridis*, and rosy anemone, *Sagartia elegans*, various sponges and sea squirts. This is particularly notable in the Gouliot Caves in Sark. Unfortunately, sea caves are little studied in Guernsey.

There are a variety of animals that also shelter and live and feed in the weed forests, many of them minute including numbers of copepod crustaceans, but also various amphipods and isopods. Flat periwinkle, *Littorina* spp. is one of the most obvious and feeds on the wracks, especially bladder and knotted, and can be very common. The white spiral shells of the tube-worms, *Spirorbis* spp., are noticeable on wrack. Sea mats, formed by various bryozoans, are often found on the wracks, and on the grape pip weed and kelp fronds lower down the shore.

Of the kelps, two are exceptionally rich microhabitats:

1. tangle or cuvie kelp, *Laminaria hyperborea*

INTERTIDAL ROCK AND BOULDER

1. the subtidal furbelows kelp, *Saccorhiza polyschides*

These provide a substrate for red seaweeds, sea firs and sea mats, whilst blue-rayed limpets, *Patella pellucida*, living and feeding on them leaving distinctive depressions once they have gone. A range of creatures also take advantage of the shelter offered by their holdfasts.

Other seaweeds providing a rich microhabitat are grape pip weed, where pheasant shells, *Tricolia pullus*, are often seen, and the rarer bushy rainbow wrack, *Cystoseira tamariscifolia*.

Under cover of seaweed mats on the rocks and in gullies, fish such as butterfish, *Pholis gunnellus*, and worm pipefish, *Nerophis lumbriciformis*, will live until the tide returns.

Under boulders and in similar rock crevices a

SEA MATS

Sea mats, formed by various bryozoans, are often found on the wracks, and on the grape pip weed and kelp fronds lower down the shore.



A sea mat on grape pip weed.

SPONGES AND SEA SQUIRTS

Though extremely plant-like in appearance, sponges are actually one of the most primitive animals in the sea!



Breadcrumb sponge



The colonial sea squirt *Botryllus schlosseri*

whole range of species can take refuge and live, including crabs such as:

- shore crab, *Carcinus maenas*
- velvet swimming crab, *Necora puber*
- broad-clawed porcelain crab, *Porcellana platycheles*
- long-clawed porcelain crab, *Pisidia longicornis*
- young chancre, *Cancer pagurus*
- hermit crab, *Pagurus bernhardus*
- black squat lobster, *Galathea squamifera*
- cushion star, *Asterina gibbosa*

Rock pools have their own distinctive flora and fauna. Small sea weeds abound, but larger ones such as the pale brown *Bifurcaria bifurcata*, are there too, especially lower down the shore. Snakelocks anemone, *Anemonia viridis*, is regularly found in pools, both in its brown and green forms along with beadlet, gem and daisy anemones.

A couple of rarer species are found occasionally, including the including the colonial anemone, *Epizoanthus couchii*, and trumpet anemone, *Aiptasia mutabilis*. Common prawns, *Palaemon serratus*, blennies and gobies are commonly seen swimming or dashing for cover in pools.

INTERTIDAL ROCK AND BOULDER

Turnstones are particularly found feeding on rocky shores during their winter stay. Other birds such as oystercatchers, shags, cormorants and gulls may spend time and feed on or fish off the rocks. Herons, kingfishers and little egrets fish in the rock pools.

OTHER ANIMALS



A green worm, possibly *Eulalia viridis*



Cushion star found on the underside of a rock

MANAGEMENT REQUIREMENTS

- Banning dog walking from L'Érée shingle bank Vazon, Perelle, Cobo and Belle Grève.
- More recording of both plants and animals. Phase 2 habitat surveys of bays as yet unsurveyed.
- Monitoring of the effects of invasive non-natives.
- Continuing the monitoring of climate change indicators and ormers by the Marine Biology Section of La Société Guernesaise.

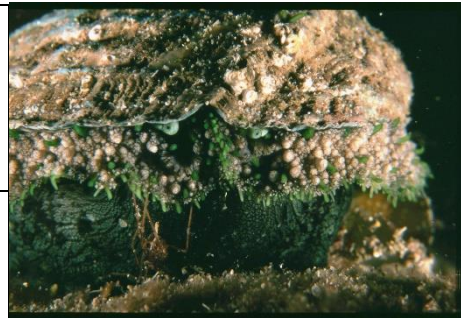
THREATS TO THIS HABITAT

- Coastal development
- Climate change – effect on the beach levels and on wildlife: cooler-water species die off.
- Invasive non-natives including
 - red ripple bryozoan, *Watersipora subatra*
 - Japanese wireweed, *Sargassum muticum*
 - the Japanese plankton, *Codium fragile ssp. fragile*
 - harpoon weed, *Asparagopsis armata*
- Pollution from oil spills and any subsequent use of detergents or run-off from the land, nutrient enrichment due to fertiliser run-off.
- Motorbike rock scrambling leading to localised damage to plant and animal communities.
- Turning over boulders both for ormers and for interest without replacing them.

INTERTIDAL ROCK AND BOULDER

Haliotis tuberculata

GREEN ORMER

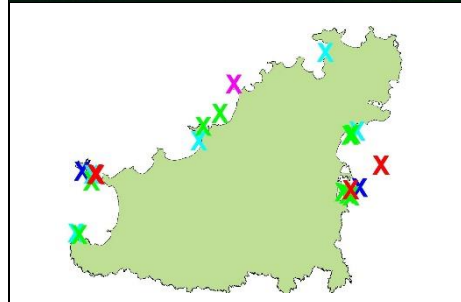


Habitat – Under rocks.

Comments – The most popular mollusc on the coast for gathering locally. Is subject to restrictions. Is just called the Ormer in Guernsey.

Threats – Overfishing by shore gatherers and divers (although the latter is illegal).

Photo: Rob Cave



Arenaria interpres

TURNSTONE



Habitat – Rock and shingle beaches. Rocky, pebbly and seaweed areas on sandy beaches. Rocks covered with seaweed are popular for foraging as is the tideline.

Comments – Dwindling wintering population.

Smith: “resident ...throughout the year its numbers, however, are much increased in the autumn by migrants, many of whom remain throughout the winter”.

Bisson: “Common winter visitor and migrant. A few non-breeding birds present in summer.”

Threats – Disturbance by dogs preventing it feeding successfully. Coastal developments.

STRANDLINE



Strandline marked with plenty of seaweed that washed up at Rocquaine Bay after a gale.



Sea shells, mostly smooth periwinkles, on the strandline.

HABITAT

This is an important micro-habitat especially on boulder or sand beaches. Storms deposit large amounts of seaweed, but the strandline collects some material all year. On a sandy shore, sand accumulates behind the strandline allowing for the development of mobile dunes and their associated vegetation. Sand that would otherwise blow inland is therefore anchored. Additionally, the strandline material itself will trap blown sand.

Typical plants

The most abundant strandline material is the brown seaweeds that dominate the intertidal flora, the wracks and oarweeds, although all intertidal algae are likely to be washed up after storms. The most common other natural material is driftwood.

Typical animals

The strandline also includes such animal remains as cuttlefish bones, shells, especially smooth periwinkle, dead crabs, and empty dogfish, skate and winkle egg cases.

A variety of animals make use of this region for shelter from the drying effects of the sun: it provides an ideal habitat for sandhoppers, *Talitrus saltator*, which burrow under weed and other detritus along the strandline. Rotting seaweed supports good numbers of seaweed flies. A variety of invertebrates, including

Staphilinid and Tenebrionid beetles, scavenge on both plant and animal remains. One example is the ground beetle *Brosicus cephalotes*, which lives in holes in the sand and preys on sandhoppers, and which also occurs in mobile dunes.

Birds, such as starlings, rock and meadow pipits, carrion crows, various gulls and migrants, such as wheatears, wagtails and waders, feed along the strandline. Flocks of starlings can be seen foraging, particularly attracted by the numbers of seaweed flies and sandhoppers in the washed-up seaweed; these now being among their most important feeding areas locally.

BIRD DISTURBANCE

A flock of starlings disturbed whilst feeding amongst seaweed and immature herring gulls searching for food along the strandline.



STRANDLINE

MANAGEMENT REQUIREMENTS

- Banning dog walking from Vazon, Perelle, Cobo, L'Erée shingle bank and Belle Grève.

- Sand racing - disturbing feeding birds and compaction damage.
- Excessive removal of seaweed.

THREATS TO THIS HABITAT

- Pollution.
- Rock armouring and other coastal defences.
- Dogs being walked off the lead and then disturbing feeding birds.

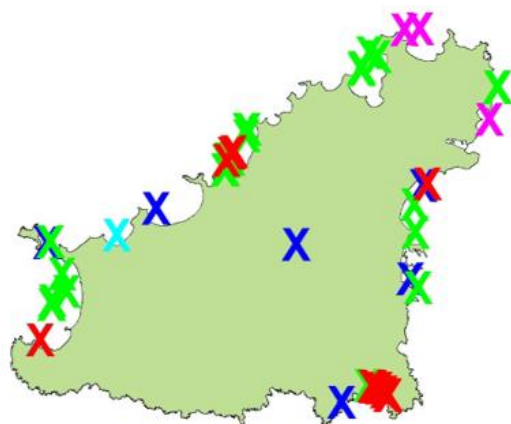


Strandline at L'Erée beach

SEAGRASS - EELGRASS



Eelgrass, *Zostera marina*, partly exposed at low water on an exceptional Spring tide.



Eelgrass, *Zostera marina*, records around Guernsey up to 2017

HABITAT

Eelgrass is a marine flowering plant with a creeping habit found usually on muddy sands. It forms patches in shallow water much like grasses do on land. The plant has an extensive network of branched, creeping underground roots that help bind the sediment. The roots also allow oxygen to penetrate into otherwise impermeable sediments. The penetration of *Zostera* roots into the sediment aerates the upper layers and provides a more favourable habitat for burrowing animals

As a result, eelgrass beds protect sand banks and beaches from erosion and help reduce sand blow on the coast. Moreover, dense meadows of eelgrass leaves increase rates of sedimentation, thereby trapping sand and silt in suspension. See

<http://www.ukmarinesac.org.uk/zostera.htm>

Typical plants

This habitat is, not surprisingly, dominated by eelgrass!

There is one species of eelgrass in Guernsey, *Zostera marina*. Dwarf eelgrass, *Zostera noltei* is only recorded off the west coast of Herm and north-west of Jethou. Eelgrass is mostly found at or below low water mark of spring tides, whereas dwarf eelgrass grows in shallow coastal waters found on wave-sheltered coasts.

ANIMALS AND EELGRASS



Calvadosia campanulata is a stalked jellyfish often found on sea grass.



Top shells and a red seaweed, the lilac patches, on eelgrass.

SEAGRASS - EELGRASS

Typical animals

It is a habitat for a variety of animals, including pipe fishes, top shells, stalked jellyfish, sea-hares, and is also used for egg-laying by molluscs, such as sting winkles.

The sediments underlying the beds support large numbers of polychaete worms such as blow lugworms and sandmason worms, bivalve molluscs, such as cockles and burrowing anemones, such as daisy anemone.

Fish such as seahorses live in seagrass beds and others benefit from the shelter afforded by the

Protection legislation would enable control of motor boat movements where this is of concern.

- Monitoring the spread of the invasive non-native brown seaweed Japanese wireweed, *Sargassum muticum*, and its effect on the surrounding Eelgrass beds. Control programme if possible and if this becomes a real threat.

THREATS TO THIS HABITAT

- Continuing vulnerability to disease is a serious concern. The reasons for the vulnerability remain unknown, but increased pollution of the marine environment has been sited. Any future pollution incidents will also potentially have direct effects on the habitat and its associated life.
- Damage by passing motor boats.
- The increasing presence of Japanese wireweed is deleterious, but more observations are needed to assess the full impact of this species.

BIRDS

Brent Geese at Vazon feeding on seagrass.

Photo: Dave Chester



habitat. It also provides spawning grounds for species such as sea bass and black sea bream.

The Brent goose's preferred diet is eelgrass and it can be seen at extreme low tide at the edge of the water in bays such as Cobo and Belle Grève, presumably enjoying a feed. At a other tide, Brent geese will feed on less-preferred food, such as green seaweeds, *Enteromorpha* spp., and, if necessary, less traditional food sources such as grasses in the Colin Best Reserve.

MANAGEMENT REQUIREMENTS

- Prevention of marine pollution in as far as this is possible.
- Minimising traffic of motor boats through the eelgrass beds at low tide levels.

SEAGRASS - EELGRASS

Legislation requirements

Habitat protection legislation is a priority.
Seagrass is a priority habitat in the UK.

DATA REQUIREMENTS

Surveying the eelgrass beds by divers is required to inform our understanding of the species that live in this habitat.

Surveying and subsequent monitoring of the habitat to assess any changes taking place in its condition at the various sites.

Invasive non-native species.



MAERL



Maerl washed up on Guernsey's east coast close to Spur Point.



Close up view of washed up maerl

HABITAT

Maerl beds consist of coralline gravel in gravels or sands. They often form in areas of tidal rapids and are usually unattached. They are similar to coral reefs in that the top layer is still living, building on the dead material below and they are an extremely rich habitat. These are found within Guernsey's waters in the Little Russell, an area with extremely strong current flows.

Most European maerl beds have been overexploited, the maerl being harvested for agricultural use –often as a lime dressing for fields. The beds here are at risk and some damage will have already occurred through dredging, and in the 19th century through dumping ballast. They have importance, not just as rich habitats, but also coralline algae may be one of the largest stores of carbon on a global scale, as they deposit large amounts of carbon in their cell walls in the form of calcium carbonate. The coralline algae that form the maerl are amongst the slowest-growing species in the North Atlantic so that any damage to the maerl beds may take decades to repair.

Typical plants

Maerl beds are created by red algae, such as *Phymatolithon calcareum* and *Lithothamnion corallioides*. They only grow 1 mm per year and the formation of maerl has been estimated to take 1000 to 8000 years. In shallower waters, red algae may be anchored to the maerl or to dead

bivalve shells amongst the maerl and include brown fan weed, *Dictyota dichotoma*, sea spider weed, beautiful fan weed, crinkle weed, Brongniart's thread weed and cock's comb.

Typical animals

The inhabitants depend upon how deep or exposed the maerl is and can include:

- soft corals
- sponges
- bryozoans
- polychaete worms
 - parchment worm
 - sandmason worm
 - *Psamathe fusca*
 - *Mediomastus fragilis*
 - *Chone duneri*
 - *Grania*
- nematode worms
- crustaceans
 - the amphipod *Metaphoxus fultoni*
 - common hermit or soldier crab, *Pagurus bernhardus*
 - harbour crab
 - wrinkled swimming crab
- sea squirts
- echinoderms:
 - gravel sea cucumber
 - common sea urchin

MAERL

- small brittle star
- white brittle star
- common starfish
- seven-armed starfish is a rarer resident.

Sea shells:

- grey top shell
- turban top shell
- Chinaman's hat, *Calyptrea chinensis*
- white tortoiseshell limpet
- shining dolphin shell
- common shell
- pointed cingula.

MANAGEMENT REQUIREMENTS

- Creating exclusion zones for activities that disturb or damage the sea bed to prevent future damage.

THREATS TO THIS HABITAT

- Marine pollution.
- The use of demersal fishing gear such as scallop dredges.
- Anchoring (localised damage).

- Invasive non-native species.
- Local beds are probably not big enough to be commercially viable for harvesting so this is not currently considered a threat.
- Pollution from oil spills and any subsequent use of detergents or run-off from the land, nutrient enrichment due to fertiliser run-off.

LEGISLATION REQUIREMENTS

Habitat protection legislation is a priority.

DATA REQUIREMENTS

Mapping and surveying the maerl beds in the Little Russel and surveying for other potential area.

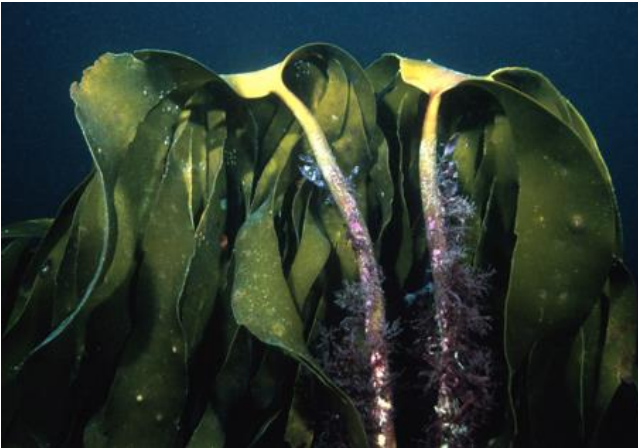
Monitoring activities that are known to pose a threat.

Motorbike rock scrambling leading to localised damage to plant and animal communities.

Turning over boulders both for ormers and for interest without replacing them.



KELP FOREST AND KELP PARK



Cuvie kelp under water showing a good population of epiphytes. **Photo: Bob Cave**



Kelp exposed at low spring tide. This is probably oarweed, as the stipes are bendy and lack epiphytes.

HABITAT

Kelp forests are common around Guernsey.

They are found in a variety of situations from the rocky areas in sandy bays exposed at low water during spring tides to undersea rock pinnacles.

Kelp forests are a very species-rich environment with more than 1,800 species having been recorded from kelp biotopes in UK waters. See:

http://www.ukmarinesac.org.uk/communities/infralittoral/ik3_7.htm

It is highly likely that ours are as diverse, but we lack the data to confirm this.

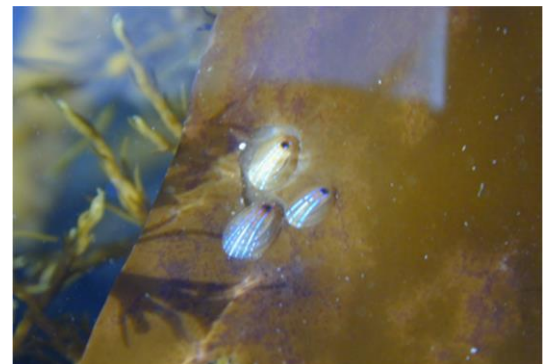
Typical plants

The typical species of kelp forming forests at low water of spring tides are:

- cuvie,

TYPICAL ANIMALS

Blue-rayed limpets move down the kelp in autumn to avoid being cast adrift if the kelp frond is damaged or lost in rough winter seas.



Blue-rayed limpets, *Patella pellucida*, on a kelp frond.

Laminaria hyperborean

- oarweed, *Laminaria digitate*

Further out, subtidal forests can be dominated by cuvie and golden kelp, *Laminaria ochroleuca*. Furbelows, *Saccorhiza polyschides*, also occurs as does sugar kelp, *Saccharina latissima*. Both can be found washed up after storms along with the debris of other kelps.

Golden kelp which is fairly common here below low water, is rarely found in the UK and only in the extreme south-west of England as it is a southern species.

KELP FOREST AND KELP PARK

Cuvie and Furbelows have a range of seaweeds, mostly red, adhering to their stipes. A typical species is dulse, *Palmaria palmata*.

Typical animals

Various animals live on the kelp and on the adherent red seaweeds, including molluscs and crustaceans. Blue-rayed limpets are striking inhabitants, which form pits where they rest and can undermine the plants with their grazing.

Others are epiphytes, such as the bryozoan *Membranipora membranacea* which grows on the blades of oarweed and cuvie.

The holdfasts are important as refuges for small animals, especially those of Furbelows being hollow and bulbous. The faunal composition of the surfaces and vertical cliffs below the kelp forests varies.

In 2016, Seasearch reported on two dive sites off the south coast of Guernsey where cuvie kelp was at both sites. The dominant faunal species were jewel anemones at Boues des Kaines. By contrast a more typical Channel Islands *yellow turf* of erect sponges, anthozoans and sea squirts (Seasearch, 2016) was observed at Les Kaines d'Amont.

Amongst mobile species an angler fish or monkfish, *Lophius piscatorius*, was seen. This is a priority species in England.

A third dive site was an underwater pinnacle with a very different flora and fauna assemblage. The pinnacle at Les Audames in the Little Russel on the Herm side of the Grand Banks was dominated by golden kelp, with an understorey of oaten pipe hydroids, *Tubularia indivisa*.

MANAGEMENT REQUIREMENTS

- Creating exclusion zones to protect kelp forests from silting due to dredging

THREATS TO THIS HABITAT

- Silting. During the 2016 Seasearch survey of two sites off the south coast of Guernsey, the divers found:

"A surprising amount of silt at both sites, both in suspension in the water and on upward facing surfaces, heavier at the closer inshore Kaines d'Amont. Given the rocky nature of the coastline and the tidal flows this is surprising." Seasearch (2016)

The source of this silt needs to be identified and the use of demersal fishing gear such as scallop dredges needs to be urgently reviewed to establish if this is the cause of the damage. The cause needs to be controlled to prevent serious damage to the fauna at such sites.

- Marine pollution.
- Anchoring (localised damage).
- Invasive non-native species.

LEGISLATION REQUIREMENTS

Habitat protection legislation is a priority.

DATA REQUIREMENTS

Mapping and surveying the kelp forests to ascertain the species both comprising the habitat and those living within the forests.

KELP FOREST AND KELP PARK

OTHER SUB-TIDAL AND OPEN SEA HABITATS



Looking toward Les Roches Douvres from the south cliffs of Guernsey.



Le Hanois lighthouse seen from Pleinmont. Home to Porpoises and grey seals.

HABITAT

The sea is such an all-pervading part of the Islands, that it is often taken for granted and its inhabitants and habitats ignored when considering activities and development.

The sea conditions vary according to exposure; tidal flow and currents. Vast numbers of plankton, including the larvae of many intertidal species, form the basis of the ecosystem.

The sea bed can be gravel, rock, sand, mud or a combination, along with underwater cliffs and other topographical features.

The range of animals and plants is too great to list here, but a few of the more obvious animals are highlighted.

Typical animals

Porpoises, bottlenose and common dolphins, sun fish and grey seals are the largest animals normally encountered in Guernsey waters. Basking sharks, our biggest marine animal, are more likely to be seen towards the Hurd Deep and mostly during the summer and early autumn.

Risso's dolphins and long-finned pilot whales are much more rarely seen suggesting that we do not have a population living locally.

Shags, cormorants, and gannets dive to fish. Other birds may join them in the winter, such as divers and grebes. Shearwaters pass through on their migration. Puffins, guillemots and razorbills are not round Guernsey, but are classic sea birds

and they are found round the other islands of the Bailiwick.

Divers see an enormous variety of wildlife, of which these photographs show just a small sample:

The open water is also home to a variety of floating animals and many can be washed up on the shores, most notably the northern and western bays. Blue jellyfish turn up regularly in the summer, whilst thousands of mauve stingers turned up in the summer of 2015 and Portuguese man-of-war siphonophores in the autumn of 2017. The regular spring appearance of mermaid's purses washed up are useful indicators of the populations of local rays and catsharks and the marine biology section of La Société Guernesiaise and the Guernsey Biological Records Centre have encouraged people to send in records and photos, with useful results. To date, blonde ray is the most commonly found, with nursehound being second.

OTHER SUB-TIDAL AND OPEN SEA HABITATS

TYPICAL CETACEANS

Over 80% of reported cetacean sightings are of bottlenose dolphins. This is for several reasons. They actively interact with humans, are part of a coastal population and are territorial.



Bottlenose dolphin, *Tursiops truncatus*,

Photo: Chloe Le Poidevin



Common dolphins, *Delphinus delphis*, fishing.

Photo: Mark Page



Risso's dolphin, *Grampus griseus*

MANAGEMENT REQUIREMENTS

Insufficient data to comment on what can be done.

THREATS TO THESE HABITATS

- Over-fishing – needs controls to prevent the collapse of fish stocks.
- Damaging types of fishing: pair-trawlers, small nets sizes leading to by-catch, scallop-dredgers affect not just fish, but marine mammals, and species that form a carpet on various habitats.
- Noise pollution affects marine animals for example, cetaceans.
- Chemical pollution has a wide range of effects.
- Coastal development.
- Dredging.
- Climate change: loss of cooler-water species leading to wholesale changes in marine food-webs and loss of birds at the southern edge of their range.
- Invasive non-native species like *Watersipora subatra*, leathery sea squirt and the bryozoan *Bugula neritina*. The first is especially concerning as it is spreading through various habitats, mostly on the east coast at present, but no doubt it will move to other coasts.

LEGISLATION REQUIREMENTS

Habitat protection legislation is a priority.

DATA REQUIREMENTS

Mapping and surveying the various underwater habitats, such as gravel plains, sand banks and rocky areas to ascertain the species both comprising these habitats and those living and feeding there. Once data is available, it will be possible to create separate habitat sheets on them.

Monitoring the spread of invasive non-natives species is especially important.

OTHER SUB-TIDAL AND OPEN SEA HABITATS

DIVING HIGHLIGHTS – COMMONLY SEEN SPECIES

Divers see an enormous variety of wildlife, of which these photographs show just a small sample.



Common cuttlefish, *Sepia officinalis*.

Photo: Bob Cave



Velvet swimming crab, *Necora puber*.

Photo: Bob Cave



A brittle star, *Ophiothrix fragilis*,

Photo: Bob Cave



Yellow skirt slug, *Okenia elegans*.

Photo: Bob Cave



Ross, *Pentapora foliacea*

Photo: Bob Cave

OTHER SUB-TIDAL AND OPEN SEA HABITATS

Palinurus elephas

EUROPEAN SPINY LOBSTER



Endangered



Habitat – Spiny lobsters are found near the coast and offshore to 70m deep, in seascapes of bedrock and boulders. See JNCC:

<http://jncc.defra.gov.uk/page-5539>

Comments – Known locally as crayfish. The photo is of one found in a crab-pot just before being returned to the sea.

Threats – Overfishing had led to near-extinction locally until fishing was banned. It is now recovering slowly, but it is imperative that the ban on fishing continues to enable it continue to build up its population.

Photo: Rick Ferbache

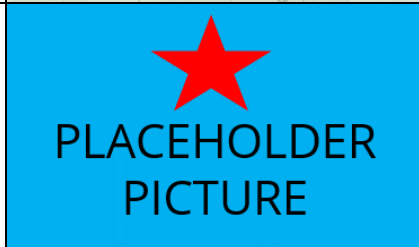


Eunicella verrucosa

PINK SEA FAN



Endangered



Habitat – This soft coral is found mainly on upward facing bedrock in areas where water movement from wave action or tidal streams is moderately strong at a depth of 4->50 m. See MarLIN websit (<https://www.marlin.ac.uk>).

Comments – IUCN Red list status: **globally vulnerable**.

Pink Sea Fans seen on the Seasearch dives in 2016 were in poor condition, with most polyps dead. It is slow-growing and has poor recovery if lost from a site.

Threats – Damage from fishing, especially beam trawling, scallop dredging; boat anchoring



Cetorhinus maximus

BASKING SHARK



Vulnerable

Vulnerable



Habitat – Migratory and pelagic. Most often seen near the Hurd Deep, but does come to inshore waters from time to time.

Comments – IUCN Red list status: **globally endangered**.

It is a filter-feeder and has low biological productivity. Protected by fisheries law. Generally seen here between late June and mid-August. The distribution map includes omits Herm and Sark. Further data needed.

Threats – Historically overfishing; currently bycatch and strikes from recreational and commercial shipping. Population is severely fragmented. There is a continuing decline of mature individuals, although it is suspected to be stable and possibly increasing in European waters. See:

<https://www.iucnredlist.org/species/4292/2988471>

Photo: Kirk Mottershead, internet



OTHER SUB-TIDAL AND OPEN SEA HABITATS

Lamna nasus

PORBEAGLE SHARK



Habitat – From surface to 715m in pelagic and coastal waters. Migratory according to temperature with a preference for 7-8 °C. As it is observed locally most months of the year this is presumably not the only factor in its choice of habitat.

Comments – **IUCN Red list status: globally vulnerable; European population critically endangered.**

Critically Endangered in the north-east Atlantic. It is protected by fisheries law. Data on abundance and distribution needed.

Threats – A risk of illegal fishing. Previously an extremely valuable species taken in trawl, line and gillnet fisheries. Pollution and habitat destruction.


PLACEHOLDER
PICTURE



Scyliorhinus stellaris

NURSEHOUND



Habitat – From intertidal to 12m, most common 20–63m. Has a preference for rough/rocky areas or areas with heavy algal covering.

Comments – **IUCN Red list status: near threatened.**

Data on abundance and distribution needed. No data available on distribution currently.

Threats – Relatively low fecundity may make it vulnerable to overexploitation, see The Shark Trust website (<https://www.sharktrust.org>), although it is not fished commercially locally. Pollution and habitat destruction.


PLACEHOLDER
PICTURE

Raja brachyura

BLONDE RAY



Habitat – Demersal; most common <100m. Prefer soft substrates such as sand as seen in the photo, and mud.

Comments – **IUCN Red list status: near threatened.**









Blonde Ray is still fished locally. It appears to have a better population locally than other species as its egg cases are the most numerous 'Mermaid's Purses' found on local beaches. Data on abundance and distribution needed.

Threats – As it matures late, has a long incubation period and a low fecundity, it is vulnerable to localised overexploitation (see The Shark Trust website), although it is not known if the current catch sizes are sustainable or not. Pollution and habitat destruction.





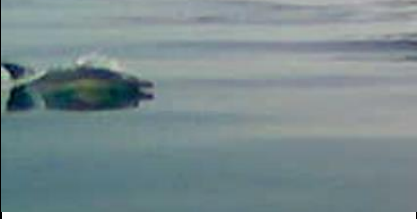
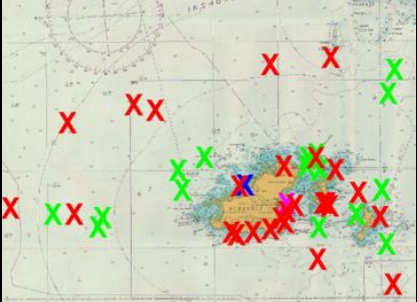
Photo: Bob Cave



OTHER SUB-TIDAL AND OPEN SEA HABITATS

<p><i>Raja clavata</i> THORNBACK RAY</p> <div style="display: flex; align-items: center; justify-content: center;">  Not known </div> <div style="display: flex; align-items: center; justify-content: center; margin-top: 10px;">  Vulnerable </div> <div style="text-align: center; margin-top: 10px;">  </div> <p>Habitat –10–300m. Demersal, adults make seasonal migrations inshore to mate and spawn. Prefers soft substrates such as sand and mud but can be found over coarser ground.</p> <p>Comments – IUCN Red list status: near threatened. It is protected by fisheries law. Data on abundance and distribution needed.</p> <p>Threats – A risk of illegal fishing. It is long lived, matures late and has a low fecundity, making it vulnerable to fisheries pressure (see The Shark Trust website). Pollution and habitat destruction.</p>	<div style="font-size: 2em; color: red; margin-bottom: 10px;">★</div> <h3 style="margin: 0;">PLACEHOLDER PICTURE</h3>
<p><i>Raja undulata</i> UNDULATE RAY</p> <div style="display: flex; align-items: center; justify-content: center;">  Not known </div> <div style="text-align: center; margin-top: 10px;">  </div> <p>Habitat – Demersal, 10–200m. Most common from 10–30m. Prefer sandy and soft mud substrates.</p> <p>Comments – IUCN Red list status: globally endangered; European population near threatened It is protected by fisheries law. Data on abundance and distribution needed.</p> <p>Threats – A risk of illegal fishing. Vulnerable to overexploitation as it matures at a large size and produces few young. It was previously a commercially important species targeted across much of its range by trawl and trammel net fisheries (see The Shark Trust website). Pollution and habitat destruction.</p>	<div style="font-size: 2em; color: red; margin-bottom: 10px;">★</div> <h3 style="margin: 0;">PLACEHOLDER PICTURE</h3>
<p><i>Raja microocellata</i> SMALL-EYED RAY</p> <div style="display: flex; align-items: center; justify-content: center;">  Not Known </div> <div style="text-align: center; margin-top: 10px;">  </div> <p>Habitat – Demersal to about 100m. Encountered on soft substrates, favouring sandy bays and sandbanks.</p> <p>Comments – IUCN Red list status: near threatened. It is protected by fisheries law. Data on abundance and distribution needed.</p> <p>Threats – A risk of illegal fishing. Potentially vulnerable to overexploitation due to typical skate reproductive strategy (see The Shark Trust website). Pollution and habitat destruction.</p> <p style="margin-top: 20px;">Photo: Bob Cave</p>	

OTHER SUB-TIDAL AND OPEN SEA HABITATS

<p><i>Phocoena phocoena</i></p> <p>COMMON PORPOISE</p> <div style="text-align: right;">  Vulnerable </div> <p>Habitat – Mainly coastal waters</p> <p>Comments – IUCN Red list status: European population vulnerable Found mainly round Les Hanois locally.</p> <p>Threats – Accidental bycatch, especially in gill nets, pollution, noise, depletion of prey by overfishing. See: http://www.iucnredlist.org/details/17027/0</p> <p>Here the low population size is a risk as they could easily be wiped out by a pollution incident.</p>	<div style="background-color: #00aaff; color: white; padding: 10px; text-align: center;">  <p style="font-size: 24px; margin: 0;">PLACEHOLDER PICTURE</p> </div> 
<p><i>Delphinus delphis</i></p> <p>COMMON DOLPHIN</p> <div style="text-align: right;">  Vulnerable </div> <p>Habitat – Pelagic.</p> <p>Comments – often seen fishing to the north-west of the Island. They are particularly vulnerable to incidental bycatch, probably because they are pelagic. The majority of dead dolphins washed up on the shores locally are of this species. A noticeable increase in dead dolphins occurred in early 2016 both here and along the French coast. This was attributed to illegal trawling.</p> <p>Threats – Accidental bycatch, especially in gill nets, pollution, noise, depletion of prey by overfishing.</p>	 

BUILDINGS INCLUDING FORTIFICATIONS AND TUNNELS



Bat roost in an old Guernsey house with pipistrelle bats under the fascia.



Close up, note the yellow staining and droppings on the lead flashing

HABITAT

All buildings can provide a habitat. However, certain features are critical for mammals and birds.

In the past, there would have been open roof lofts (attics) and no pesticides would have been anywhere near the timbers. Under the pantiles there were gaps for starlings, house sparrows, swifts and pipistrelle bats to gain entry and nest.

Cellars, mainly found in town, were left unheated and were great for roosting greater horseshoe bats.

Barns were common with roof spaces and plenty of space underneath for nests on the beams with doors left open in the spring and summer so swallows could guarantee access to nesting sites year on year, whilst barn owls would be able to use the roof space along with grey long-eared bats.

House martins were able to nest under roof eaves.

Additionally, there were caves where bats could find a quiet nook or cranny in winter to hibernate.

After the Second World War, the tunnels created for both defensive and hospital use, were a new 'cave-like' habitat for bats.

However, in the last half century, the changes have been immense.

Many roofs have been subject to loft conversions so no longer have voids that are critical to the grey long-eared bat.

The holes and access points have gone with the increasing emphasis on annihilating drafts (so incidentally making the property more at risk from rot in the damp Guernsey climate).

Most barns are now dwellings with no open access and many also with loft conversions, so making them inaccessible to bats, swallows, barn owls etc.

Recently there has been an increasing trend to demolish dwellings to build one or more new buildings and these are sealed with no obvious entrances for bats or birds.

Many houses have had timber treatments, some approved for use where bats and birds are present and others highly toxic to them. Formerly, certain fungicides used for the treatment of dry rot were highly toxic, but these are now no longer in general use, most, if not all, having been banned.

BUILDINGS INCLUDING FORTIFICATIONS AND TUNNELS

The latest risk is the latest technology in roof membranes: breathable roofing membranes: the bats become entangled in the membranes and die a slow death due to dehydration and starvation.

The use of pesticides to kill woodworm also poisons bats and birds inhabiting the space.

Disturbance is a big problem in some of the tunnels, which have new uses for tourism, museums and war-games. Some are used for storage and sadly, some have been blocked.

Many houses have smaller roof overhangs with virtually no eaves and many house martin nests are routinely removed.

MANAGEMENT REQUIREMENTS

- Provision and maintenance of roosting entrances and sites in houses.
- Provision of wintering hibernation sites: either by adaptation, such as fitting grilles to old occupation tunnels and excluding unauthorised human access or by constructing small, specially-designed buildings.
- Building of specialised roosting sites.

THREATS TO THIS HABITAT

- Loft conversions and barn conversions where bat roosts, and/or barn owl and swallow nests are present.

- Disturbance to roosts and hibernation sites at critical times of year.
- Use of certain toxic chemicals in roof spaces.
- Use of breathable roof membranes.
- Sealing roofs, especially under tiles, so no gaps are present.
- Knocking house martin nests off.

LEGISLATION REQUIREMENTS

Roost and nest protection legislation is a priority.

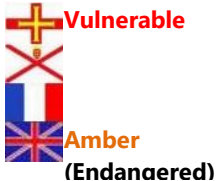





DATA REQUIREMENTS

Surveying buildings on sites with applications for development is a priority.

Surveying for roost in buildings and tunnels needs support from the States of Guernsey to ensure that this can be continued.



BUILDINGS INCLUDING FORTIFICATIONS AND TUNNELS

<p><i>Apus apus</i> SWIFT</p> <div style="text-align: center;">  </div> <p>Habitat – Roof spaces, church towers. Will use specially-built nest boxes. Feeds on insects, sometimes high up.</p> <p>Comments – Smith: <i>“tolerably numerous summer visitant”</i>. He describes them nesting amongst the cliffs, probably near Pleinmont from the context, and on houses.</p> <p>Bisson: <i>“Breeds; fairly common summer visitant and common migrant.”</i></p> <p>Threats – Loss of breeding sites due to development of or blocking up access to roof spaces. Reduction in numbers of aerial insects due to decline in species-rich habitats.</p>	 <h2 style="margin: 0;">PLACEHOLDER PICTURE</h2>
<p><i>Hirundo rustica</i> SWALLOW</p> <div style="text-align: center;">  </div> <p>Habitat – Inside buildings where access is available. Feeds over grassland, along lanes, and over water</p> <p>Comments – Smith: <i>“Is a common summer visitant...very generally distributed”</i>.</p> <p>Bisson: <i>“Breeds; common summer visitor and migrant.”</i></p> <p>Threats – Loss of breeding sites due to development of barns and outbuildings. Loss of permanent species-rich grasslands, and loss of grazing and its associated insects.</p>	 <h2 style="margin: 0;">PLACEHOLDER PICTURE</h2>
<p><i>Delichon urbicum</i> HOUSE MARTIN</p> <div style="text-align: center;">  </div> <p>Habitat – Under eaves of buildings for nesting. Feeds over grassland and water.</p> <p>Comments – Smith: <i>“Much more local than the swallow, but still a numerous summer visitant...confined to certain spots...outskirts of the town about Candie road, and the rocks [cliffs] in Fermain and Petit Bo Bay, seem very favourite nesting-places”</i>.</p> <p>Bisson: <i>“Breeds; common summer visitor and migrant. Apparent increase in breeding numbers in last 25 years.”</i></p> <p>Threats – Loss of breeding sites due to being knocked off buildings. Loss of permanent species-rich grasslands, and loss of grazing and its associated insects.</p>	 <h2 style="margin: 0;">PLACEHOLDER PICTURE</h2>

BUILDINGS INCLUDING FORTIFICATIONS AND TUNNELS

<p><i>Passer domesticus</i> HOUSE SPARROW</p> <div style="text-align: center;">  </div> <p>Habitat – Roof spaces, air ducts, holes in trees. Feeds on seeds and insects.</p> <p>Comments – Smith: <i>“is very numerous...abounding wherever there are buildings inhabited by either man, horse, or cattle.”</i> Bisson: <i>“Breeds; vey common resident.”</i></p> <p>Threats – Loss of breeding sites due to development of or blocking up access to roof spaces. Air pollution. Loss of species-rich habitats and species-rich arable fields.</p>	
<p><i>Plecotus austriacus</i> GREY LONG-EARED BAT</p> <div style="text-align: center;">  </div> <p>Habitat – Permanent grassland and open woodland for foraging; buildings with open roof spaces for roosting.</p> <p>Comments – Now threatened with extinction- no maternity roost currently known and the most important known former sites have had loft conversions. Nigel Jee considered them quite common in 1972.</p> <p>Threats – Ploughing up of permanent grassland, planting grassland with trees, invasion of grassland with bracken and scrub, and development of roof spaces for rooms ('loft conversions'), timber treatments, pesticides.</p>	

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Appendix A BIRDS AT RISK

Those included in the main text (colour shows red, amber or green status in the UK, see 'Birds of Conservation Concern: The Red List for Birds (2015)').

Species	UK Status	Local Status	Habitat
Brent goose	AMBER	vulnerable winter visitor	
Bullfinch	AMBER	vulnerable resident	woodland and orchards
Common tern	AMBER	declined and very vulnerable to disturbance	rocky offshore islets
Cuckoo	RED	declined and now occasional breeder	habitat depends on 'host' chosen
Curlew	RED	declining and vulnerable winter visitor	
Dartford warbler	AMBER	declined and vulnerable breeder	commons and heathlands
Dunlin	AMBER	dwindling wintering populations	
Grey wagtail	RED	vulnerable small wintering population	
Herring gull	RED	declining and now vulnerable	coastal, intertidal and marine
House martin	AMBER	permanent species	rich grasslands, water, bare ground, grazing
House sparrow	RED	declined resident	air pollution, species-rich grassland and arable
Linnet	RED	uncommon breeder	stable sand dune and coastal grasslands and heaths
Meadow pipit	AMBER	declining and now scarce breeder	grasslands
Mistle thrush	RED	recently extinct breeder	
Oystercatcher	AMBER	declining	shingle banks, hard cliffs and boulder
Reed bunting	AMBER	extinct breeder, rare wintering species	reed beds
Reed warbler	GREEN	declining and vulnerable	reed beds
Ringed plover	RED	declined and now occasional breeder	shingle banks
Sand martin	GREEN	declined and now small vulnerable population	soft cliffs
Shag	RED	declining and vulnerable to poor sea conditions, nationally important population	hard cliffs
Skylark	RED	recently extinct breeder	species-rich grassland
Snipe	AMBER	declining winter visitor at risk from shooting	marshy grassland and bogs
Song thrush	RED	vulnerable	grasslands



Spotted flycatcher	RED	rare local breeder	
Starling	RED	declining resident	permanent species-rich grassland, dung, strandline especially seaweed
Stonechat	GREEN	declining resident	stable sand dune and coastal grasslands and heaths
Swallow	RED	declining population	permanent species-rich grasslands, water, bare ground, grazing
Swift	AMBER	declining breeder	
Turnstone	AMBER	dwindling wintering populations	
Turtle dove	RED	declined and now scarce breeder	species-rich grassland and arable
Willow warbler	AMBER	vulnerable due to low population	woodland
Woodcock	RED	vulnerable winter visitor at risk due to shooting and disturbance	

Other bird species at risk but not referenced in the main text:

Species	UK Status	Local Status	Habitat
Cetti's warbler	GREEN	scarce breeder vulnerable due to low population	reed beds
Chiffchaff	GREEN	vulnerable	woodland
Fulmar	AMBER	recently declining and vulnerable due to low population	cliffs
Goldcrest	GREEN	vulnerable breeder	
Jack snipe	GREEN	declining winter visitor	marshy grassland and bogs
Lesser black-backed gull	AMBER	vulnerable	coastal, intertidal and marine
Little grebe	GREEN	rare breeder?	
Long-eared owl	GREEN	scarce breeder vulnerable due to low population	woodland
Marsh harrier	AMBER	scarce breeder vulnerable due to low population	reed beds
Peregrine	GREEN	scarce breeder vulnerable due to low population	range of habitats
Raven	GREEN	scarce breeder vulnerable due to low population	hard cliffs